



Scanning -- Shortwave -- Satellites -- Ham Radio -- Computers

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# Monitoring Times

## New Voices from a former Super Power

Also in this issue:

Monitoring Operation Iraqi Freedom

Scanning Georgia I-75

MT Reviews the Uniden B250D

DSP Audio Solutions





## New AOR AR8600 Mark II (base) and AR8200 Mark III (handi) Receivers

# The Choice of Professionals



AOR receivers are fast becoming standard equipment for government agencies across North America and beyond. *Why? Quality, durability, sensitivity and selectivity are some of the reasons, but there are more.*

AOR units are being used for surveillance and interagency coordination, they're patrolling our borders, riding the waves along our coastlines, helping to detect sources of interference and so much more. We're proud to be the choice of so many professional users and that's an honor that is *earned*, the hard way.

So what's your choice? When you want to monitor activity ranging up to 3 GHz\*, AOR is ready with the AR8600 Mark II and the AR8200 Mark III. We also have many other advanced receivers and accessories, check them out at our web site.

Sure, you could pay less for a discount-store receiver, but what you really want is what the "pros" are using, **AOR - The Serious Choice in Advanced Technology Receivers.™** AOR is only available through quality radio suppliers. See our web site for retailers.



### AR8600 MARK II Desktop/Mobile Receiver

We expanded coverage, upgraded the front end, and improved receive audio response. We also added display illumination control and we're working on an optional NTSC video module.

- Improved ultra-stable Temperature Compensated Crystal Oscillator (TCXO)
- Expanded tuning range: 100 KHz ~ 3 GHz \*
- Receive Modes: WFM, NFM, SFM, WAM, NAM, USB, LSB, CW. Optional NTSC Video module available soon.
- New front end RF stages for superior sensitivity and selectivity.
- 2 VFOs (A/B)
- 1000 memory channels (20 banks X 50 memories/bank)
- 40 search banks
- Up to 37 channels/second search rate
- Five expansion slots, use up to 3 optional slot cards at one time. Available cards include: Tone Eliminator, CTCSS, Recording, External Memory.
- Accommodation for Collins® Mechanical Filters
- RS-232C port
- Download free control software from [www.aorusa.com](http://www.aorusa.com)
- 10.7 MHz i.f. output (can be used with SDU 5500 Spectrum Display Unit or for secondary signal processing.)
- 12 VDC operation
- BNC antenna connection

**Technology so advanced, it's patented** (US Patent 6,002,924).

### NEW! AR8200 Mark III Hand-held Receiver

Improved RF circuits combine greater sensitivity, resistance to intermod products and enhanced Signal to Noise ratios.

- New TCXO for greater stability - performance not found in most desktop units!
- Covers 500 KHz ~ 3 GHz - world's first handheld with this range!\*
- Ni-MH batteries included (1500mAh)
- 1,000 memory channels (20 banks X 50 channels)
- 40 search banks
- 2 VFOs
- Alphanumeric channel and bank labels
- Computer control and programming. (requires optional connection cable)
- Download free control software from AOR web site!
- "All Mode" reception includes "super narrow" FM plus wide and narrow AM in addition to USB, LSB, CW and standard AM and FM modes
- True carrier reinsertion in USB and LSB modes. Includes 3 KHz SSB filter!
- Detachable MW antenna with negative feedback
- Optional internal slot cards expand the AR8200 Mark III's capabilities. Choose from Memory Expansion (up to 4,000 memories), CTCSS Squelch & Search, Tone Eliminator, and Record Audio (saves up to 20 seconds of audio)
- Tuning steps programmable in multiples of 50 Hz in all modes
- 8.33 KHz airband step is correctly supported
- Noise limiter and attenuator
- Band activity "scope" display with "save trace" capability
- Four-way side panel rocker switch allows one-hand operation
- Large, backlit, multifunction display and illuminated keypad
- Battery Save function with Low Battery indicator
- Operates on 12 VDC external power (adapter included)
- BNC antenna connector
- Wide choice of accessories

**Discover why AOR receivers are the choice of many federal, state and local government agencies. Military users, laboratories and professional news-gathering operations also use AOR, the serious choice in advanced technology receivers.™**



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# "A shock to the system." \*

The new WINRADIO G303i receives rave reviews. And shortwave radios will never be the same.

\* Shortwave Magazine, February 2003

## The exciting WINRADIO G303i Software-Defined Shortwave Receiver is now available.

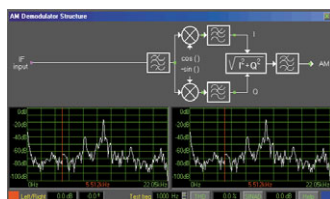
Why is it *Software-Defined*? Because the entire last intermediate frequency stage and all-mode demodulator are implemented entirely in signal-processing software running on a personal computer. This brings about significant advantages: performance, flexibility, configurability, reliability and convenience. There is also reduced risk of obsolescence, as new demodulators for new types of modulation are as easy to add as inserting a CD ROM into a PC drive.

The receiver comes on a PCI card and installs in minutes. Just plug the card in, connect its output to your PC sound card, install the supplied software, and let the world's most innovative shortwave receiver surprise you with its performance and amazing new features.



In addition to the flexible and friendly user interface with numerous functions and facilities not normally available on a conventional receiver, the WINRADIO G303i Software-Defined Shortwave Receiver excels particularly with the ability of its demodulators: While the Standard Demodulator provides the performance of a highly respectable shortwave receiver, including synchronous AM demodulation and a real-time spectrum scope, the optional Professional Demodulator offers even more: continuous selectivity setting (in 1 Hz increments), interactive block diagrams with additional real-time audio spectrum scopes, built-in performance test facilities, user adjustable filters, and many other features. Additional demodulator types are planned as further options, including a DRM (digital radio) demodulator.

Just when you thought that there is nothing in shortwave that can surprise you anymore, here comes the new WINRADIO G303i. It *will* impress you. We guarantee it.



The G303i control panel includes many features such as a real-time spectrum analyzer, numerous tuning and scanning options, highly accurate S-meter showing signal strength in various units, sweeping spectrum scope and powerful memory facilities.

The optional Professional Demodulator expands the receiver capabilities yet further by introducing numerous innovative features, world-first for this type of radio, such as variable filter bandwidth adjustment and interactive block diagrams.

### Specifications

- Frequency range 9kHz to 30MHz
- Tuning resolution 1Hz
- Modes AM, AMN, AMS, USB, LSB, CW, FM3, FM6, FMN
- Sensitivity 0.3µV (AM, 80% modulation, 10dB S/N)

### System Requirements

- IBM PC compatible (CPU 500MHz or higher, PCI slot)
- Sound Blaster 16 (or compatible sound card)
- Windows 98/ME/NT/2000/XP

Specifications are subject to change without notice. WINRADIO and G3 are trade-marks of WINRADIO Communications. WINRADIO technology is protected by US Pat. No. 6,289,207 and other existing or pending patents or patent applications. ©2003 WINRADIO Communications, Melbourne

Check out the special introductory price of the Professional Demodulator option which includes the following additional features:

- Variable IF bandwidth (1Hz to 15kHz)
- ISB and DSB modes
- Variable filter length (selectivity) adjustment
- Interactive demodulator structures
- Vector voltmeter, THD and SINAD meter

The WR-G303i receiver was reviewed by the Shortwave Magazine (Feb. 2003), Monitoring Times (March 2003) and Radio & Communications (Feb. 2003), with impressive conclusions. Here are only a few highlights of the reviews:

**On spurious signal rejection:** "As far as I can remember I have never found any receiver, analogue or digital, which had such cleanliness, and the WR-G303i has set a new standard for others to emulate." [SWM]

**On sensitivity:** "... higher than necessary in a receiver of its type...". [SWM] • "Much of this sensitivity is contributed by the low phase noise of the oscillator, typically -148dBc/Hz @ 100 kHz. Clearly this radio meets or exceeds the competition head on..." • "With a sharp filter selection using the Professional Demodulator, CW signals as weak as 30nV (0.03 uV) are distinct." [MT] • "In short, the performance is superb. The sensitivity and selectivity surpassed my expectation, and there was no sight of intermod even in the presence of strong stations at night time." [R&C]

**On variable IF bandwidth:** "... a very useful feature and allows you to exactly match the filter bandwidth to the incoming signal ... once experienced never to be forgotten." [SWM] • "... an astounding feature to hear when invoked!" [MT] • The experience of being able to finely tune selectivity to suit a particular signal you are listening to is truly incredible, especially if you have been used to having just a few fixed bandwidths on your old radio." [R&C]

**The verdict:** "If I had to choose between a Collins 95S-1 and the WR-G303i (ignoring the obvious fact that the 95S-1 tunes to 2 GHz), I would take the WR-G303i." [SWM] • "This receiver is a gadget-owner's dream! But it isn't fantasy; for the first time in consumer technology, the shortwave listener can tailor his receiver to his own requirements, independent of factory-set parameters." [MT] • "The WINRADIO WR-G303 receiver, in addition to being an excellent receiver on its own right, has a certain exciting feeling about it. Perhaps this is because of the promise of a change of an entire paradigm which makes a difference between just another run-of-the-mill product and a truly innovative cult product, sparking an entirely new following." [R&C]

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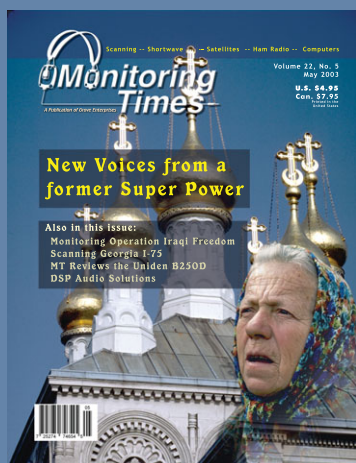
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# Monitoring Times

Vol. 22, No. 5

May 2003



## Cover Story

### New Voices from a Former Super Power

By Gayle Van Horn

The break-up of the former Soviet Union has had a big impact on the shortwave broadcast radio scene. Former powerhouse signals are gone, relay sites have become independent broadcasters, clandestine stations have sprung up to meet shifting political realities, and western broadcasters find air time available on previously closed transmitters.

This ambitious article seeks to cover each of the former republics, with history, frequency and QSL contact information.

### A Conventional Look at Georgia..... 17

By John Mayson

MT is traveling again, scanner in hand – this time across the large state of Georgia on I-75. This route, familiar to any midwesterner headed for Florida, yields plenty of activity for the traveler with a conventional scanner – not all interesting comms are trunked. Y'all come back, now...

### Interesting QSOs ..... 20

By Arthur Lee WF6P

Also titled "Of Boats, Trains, and Trailers," this article remembers some unusual and creative ways the author has conducted ham radio contacts (QSOs).

### "Operation Iraqi Freedom" Satellite Monitoring.... 22

By Robert Smathers

The amount of media coverage performed by embedded journalists via satellite will be one of the most memorable aspects of Operation Iraqi Freedom. How do they do it, and why didn't we see this kind of coverage in other operations?

*A B2 stealth bomber being refueled at night near Iraq (see page 62)*







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## Reviews:

First out of the gate with a digital scan-  
ner was Uniden, with its **BC250D** Portable  
Scanner. Parnass puts this feature-laden  
scanner through its paces; the digital card  
will be reviewed in a later issue (p.78).

Midland is offering a tiny GMRS/FRS  
two-way radio that performs with the best  
of them, and the price of the **M-222P** can't  
be beat (p.86).

This month *MT* covers three ap-  
proaches to digital signal processing. First  
is the software approach using the **Diamond  
Cut Five/Live** program. This enormously  
sophisticated software acts as an audio  
analysis tool, signal generator, audio filter,

and more to really dig signals out of the  
noise, whether live or prerecorded (p.80).

MFJ's **Noise Canceler/Signal En-  
hancer MFJ-1025** phases out noise and  
boosts signal strength by using two anten-  
nas. As sold, it is designed for the amateur  
bands, but a simple modification allows it  
to work on AM and LW, too (p.82).

Last but not least, the **GAP "Hear It"**  
**DSP Speaker** cleans up hiss, distortion, and  
other unwanted noise. The small speaker is  
ideal for voice frequencies but can also be  
used between the receiver and other head-  
phones or speakers (p.85).

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## Monitoring and the Law

### Our E Pluribus Unum Radio Laws

**T**here is no single radio law in the United States. We are, after all, a nation of many “nations.” Our fifty states each have laws and legislative bodies that answer to the citizens of that particular state. Each state, county, and city, and in some places each township and village, has limited law-making powers to pass laws. In addition, the federal government establishes laws that all citizens in every state must follow. Then there is international law and, in the United States, the sovereign right of Native American tribal law for those tribes that Congress recognizes.

Perhaps no other piece of consumer electronics is fraught with more potential for legal trouble than a scanning radio or even a shortwave radio in some nations. Even when the user is fully within his rights and the law, the government is often suspicious of those who listen, especially to law enforcement communications. In fact, a correlation seems to exist between the power of the group or government department one wishes to listen to and their power or attempts to regulate that listening. This column will cover the past, present and future of those regulations – the laws that apply to the radio listener.

#### ◆ State’s Rights

Seventeen states have or have had laws specifically addressing the use or possession of what we commonly refer to as a scanning radio. While each state’s law is different, a review of all of them reveals patterns and similarities.

Lawmakers don’t just sit down and decide, “there ought to be a law,” and then write one from scratch. Rather, when the idea of regulating or restricting a certain behavior is brought to their attention, they often assign staff members or legislative assistants to research what other states and governing bodies have done and how has it worked. From those successes and failures they draft their own version, tailored to any special facts or circumstances in their particular jurisdiction. It is not uncommon therefore to find striking similarities between the laws of states that aren’t even neighbors.

The statutory scheme typically works like this: In those states with laws pertaining to scanning radios, approximately thirty-three states have no restrictions on scanning radios. In the remaining states, possession is usually not illegal, but sometimes possession outside your home maybe against the law. Mobile possession – in an automobile or other vehicle may be illegal, but even that may be narrowly defined. In some places having a scanner at your place of work is not allowed, unless your place of work sells or repairs the radios. Then in recent years, following the 1986 enactment of the Electronic Communications Privacy Act, we’ve seen a shift to prohibiting the mere tuning and listening of certain frequencies.

Some states, like California, prohibit listening for the purpose of assisting someone in committing a crime. Florida doesn’t allow you to install a scanner in your car, but then defines what is considered “installation” narrowly. Indiana outlaws possession, but then narrowly defines what a “police radio” is and provides a “shopping list” of places and persons who are exempt.

One type of person who is exempt under Indiana’s law – and those of most states that regulate scanners – is the federally licensed amateur radio operator. However, even here, the vagaries and nature of the law conspire for some odd and probably unintended results.

#### ◆ Mother, May I?

Since the licensing of amateur radio is regulated by the federal government and the licensing scheme has changed more than once in recent years, states must keep up, but often don’t. Kentucky, for example, exempts persons who hold any valid amateur radio license. Michigan’s outdated, but still valid law exempts amateur radio operators with a Technician, General, Advanced or Extra class without recognizing that while grandfathered in, the Advanced Class of license no longer exists. Those states that regulate also usually exempt law enforcement persons and journalists.

Among the states that regulate, some provide for permits to listen. But that, too, has proven problematic. Minnesota, for example, actually provides for permits in their actual state law. The language of the law even seems encouraging when first read, since it seems to be what the law calls “shall” language.

Many laws can be divided into two areas: “shall” laws and “may” laws. “May” laws give courts or the authorities broad discretion in deciding whether to do something or not. However, “shall” laws are supposed to take away that discretion and make things black and white with no shades of gray. If you meet the rules or criteria set out in a “shall” statute, the authorities are supposed to follow through on their end of the bargain.

When you read Minnesota’s law further, you find that the “shall” language is tempered by the words that follow. That language requires a good cause and, as anyone who has applied knows, “good cause” is whatever the person deciding thinks it is. In other words, in Minnesota scanner listeners *may* get a permit to listen, but never *shall* get a permit to listen.

#### ◆ Sorting It Out

In future issues we’ll sort out this jumble of laws across many jurisdictions, but as always, nothing in this or any future article should be considered legal advice. If you’re going to put yourself in a situation you believe is covered by one of the laws discussed, and you’re not certain how the law applies to you, you should contact an attorney licensed to practice law in your state for direction. Nothing in this article or future articles should be construed as a legal advice.

In addition, if you have had a direct encounter of the legal kind, please share your story with other *MT* readers. We’ll keep your name confidential if you prefer, but others may benefit from your experience, positive or negative. Please write c/o *Monitoring Times*, or email [jorgerodriguez@monitoringtimes.com](mailto:jorgerodriguez@monitoringtimes.com)



# Is your antenna ready for the harsh winter cold? Do Your Signals Seem a Little Weak?

## It's Time to Upgrade Your Reception with These Fine Grove Products!



### Grove OMNI II

Designed by Bob Grove, this exclusive Grove product offers 25-1300 MHz coverage; lightweight, compact design, high performance, and low cost! Designed especially for wide-area metropolitan listeners, the 68" Omni can be mounted on a mast, in an attic crawl space, against a wall—just about anywhere convenient.

**BONUS FEATURE!** Although the Omni is essentially non-directional, a metal mast gives it useful directional properties. Overload interference from paging transmitters, weather stations, FM or TV broadcasters, or other sources may be reduced or eliminated when positioning the antenna on the mast at the time of installation!

Similarly, a distant, weak signal may be peaked by the same technique!

Balun transformer with F connector, offset pipe, mounting hardware and full instructions included.

**Order ANT 5**  
**\$29.95**

includes shipping  
in the US

### THE SCANTENNA

This omnidirectional scanner antenna will equal or outperform any competitor on the market. Its dipole-cluster design utilizes broadband techniques to provide continuous frequency coverage from 25-1300 MHz, offering superb reception of public safety, civilian and military aircraft, hams, personal communication devices, maritime, CB—anything in its frequency range!

Approximate size 7-1/2'H x 4-1/2'W.

**SPECIAL:** Now  
includes 50' of coax  
cable plus Motorola  
and BNC connectors!

**\$54.95** **ORDER**  
**ANT 07**

includes shipping  
in the US



### Grove Skywire Dipole



High performance and low cost—an unbeatable combination! Why restrict your frequency coverage with the gaps found in expensive trap dipoles or unpredictable random wire when you can get unsurpassed full-frequency reception with the Grove Skywire? Comes assembled

with Budwig center connector ready for your PL-259 (UHF male) equipped coaxial cable (50 or 75 ohm); includes two professional porcelain end insulators and complete instructions.

**HAMS!** Ideal for transmitting when used with a transmatch. (1.8-30 MHz at up to 250 watts)

**ORDER ANT2 for only \$29.95!**

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### NEW! SCANNER BEAM II

A standard of unexcelled performance for more than 20 years, our world-renowned Scanner Beam has been improved to provide better directivity!

• Ideal for 30-50 MHz low band reception, 54-800 MHz FM Broadcast and TV, 108-137 MHz aircraft, 137-174 MHz high band, 225-400 MHz military aircraft and satellites, 406-512 MHz UHF, and 698-960 MHz extended microwave mobile.

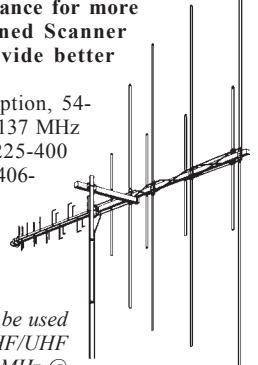
• The major lobe pattern is directional from 100-900 MHz, non-directional outside of that range.

• **HAMS NOTE:** The Scanner Beam can be used for transmitting up to 25 watts on VHF/UHF with the following average VSWR: 50 MHz @ 1.9:1, 144 MHz @ 3:1, 222 MHz @ 3:1, and 430 MHz @ 1.5:1. 50-72 ohms nominal impedance.

• May be used with inexpensive TV antenna rotator or fixed in favored direction. Local signals still come in loud and clear from all directions. Balun transformer, offset pipe and all mounting hardware included (requires TV type F connector on your coax).

**Order ANT 18**  
**\$74.95**

includes shipping  
in the US



### Professional Wideband Discone

The discone antenna is used by government and military agencies worldwide because of its wide bandwidth characteristics and non-directional coverage. Now Diamond offers a professional grade discone at a popular price.

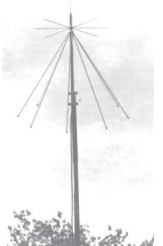
Designed for use with wide-frequency coverage VHF/UHF scanners and receivers, the Diamond D130J discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna, the D130J is omni-directional for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-50 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1" to 2-1/8" diameter).

**Order ANT 9**  
**\$99.95**

includes shipping  
in the US

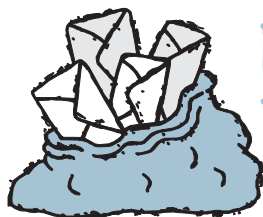


### Additional Products

• CBL 50	50' RG-6U	\$19.95
• CBL 100	100' RG-6U	\$24.95

includes shipping in the US





# LETTERS

## TO THE EDITOR

### Winterfest Report

Although it's now May and memories of blizzards are almost forgotten, I'd like to acknowledge the 16th annual Winter Shortwave Listeners Fest which took place Kulpsville, PA, in the frigid weather of early March. This gathering of radio enthusiasts was purported to be the best one yet – certainly one of the largest, with 225 in attendance. Though it was only my second visit, it was tops in my book.

Winterfest 2003 was highlighted by the first demonstration outside Europe of the Digital Radio Mondiale (DRM) digital broadcast mode, with several transmissions made especially for the Fest. The demonstrations were even reported by MSNBC's Gary Krakow in "Radio is Going Digital," Mar 12, in the Science and Technology section.

Equally exciting was a contingent of 25 IBB monitors from around the world: these folks monitor VOA and other official US broadcasts to verify the presence and quality of transmissions, and even help resolve frequency interference issues. VOA's Bill Whitacre had timed their meeting to coincide with the Winterfest.



*Several receiver and personal computer-based decoder setups were operational to demonstrate DRM, courtesy of James Briggs of VT Merlin and Jan Peter Werkman of Radio Netherlands. Richard Cuff summarized his impressions on the Internationallistener.com website: "The quality of the audio is quite stunning – near-FM quality from transmitters based in Canada, the UK, the Caribbean, and the European Continent, with transmitter powers often 1/4 the level of the powers traditionally used to reach North America. However, conditions need to be favorable for DRM encoded transmissions to be audible – severe fading, or sub-par signal/noise ratios render the received signal unusable. Unlike traditional analog shortwave, DRM either sounds great, or is silent – there is no in-between capability. It's one thing to listen to the audio clips available on the DRM website, but it's quite a thrill to hear the BBC World Service on shortwave targeting North America in high-quality audio." (Photo by Tom Sundstrom)*

Although some aspects of a Winterfest resemble a family reunion, more than 15 educational forums were well-presented and well-attended. Question and answer sessions quickly showed the high level of experience represented by attendees as well.



*Treasuring radio's past, John Filgionzi shows his ancient Grundig to Adrian Peterson, who displays his ancient QSLs. Don't scoff: all of these preserved items are now quite valuable in the marketplace. (Photo by Rachel Baughn)*

Mingling in the audience you'll find broadcasters and DXers whose names are legendary. Here are only a few from this year's event: Kim Andrew Elliott of VOA, DXer and IBB monitor Victor Goonetilleke, Sheldon Harvey of HF Radio, Larry Magne of *Passport to World Band Radio*, Pete Miller of Radio Slovakia International, Bill Oliver, Toshi Otake of Japan SW Radio Club, Dr Adrian Peterson of AWR, Andy Sennitt of Radio Netherlands, Don Schimmel, Risto Vahakainu of European DX Council, Alan Weiner of WBCQ, Jeff White of WRMI, and Bob Zanotti, formerly of Swiss Radio International. You'll also meet *MT* staffers like Skip Arey, John Filgionzi, Mark Fine and George Zeller, as well as *MT* freelance writers and contributors like Manosij Guha, Mike Agner, and Lee Reynolds. Familiar names from the scanner world are there, too, like Ed Muro and Tom Swisher.

As you see, most of the fest is about



*Three IBB monitors from Russia and former Soviet Republics. Imagine getting paid for your hobby – because most of these monitors were hobbyists first! (Photo by Tom Sundstrom)*



*Rachel Baughn and MT reader Fred Zalupski (Photo by Tom Sundstrom)*



*Victor Goonetilleke*

people, but for some it's also about prizes. Look at this partial list and you'll see why: a TenTec 350 (the grand prize, won by a long-time and therefore well-deserving *MT* subscriber), a Palstar P30, an ICOM R-75 (with the DSP upgrade), an ICOM R-2, an AOR A-16, a Sangean CCRadio Plus, a Tivoli Audio Pal, a Sony XR-CA620X car shortwave radio, and a GE Superadio III!

Mark your calendars: the 2004 Fest is scheduled for March 12th and 13th, 2004.

P.S. Plans are still underway to invite Radio Havana's Arnie Coro as next year's banquet speaker. About half the necessary funds were raised; see <http://www.swlfest.html.com/coro.html> for info on how to help.



*"Uncle" Skip Arey*

## Get it Right the First Time

"I read Bob Parnass' review of the AOR 8600 Mk II (Oct 2002) and became more dissatisfied with this brand of scanners. I don't understand why they can't get it right the first time. I am not able to turn around and buy these guys' scanners every time they think they are getting it better. I can't even afford to pay \$600 to almost \$1000 for a scanner that seems to have too many discrepancies.

"The Bearcat 780XLT is a much better deal any day to me over AOR and I have not even been able to really justify buying one of these. I hope our government is not wasting our tax dollars on this crap. I own an old AOR 2700 and do not like it much either."

— John Tomlinson KA5QYR

"I appreciate your sharing your thoughts on scanner upgrades with new models. I guess it's like virtually any other technical device — automobiles, TVs, stereos, computers — there's always something new around the corner. That doesn't mean we have to like it, it only means that's the way it is."

— Bob Grove

## SW Still Source of Information

"I recently found an interesting article about shortwave in the *The Los Angeles Times*. Apparently the Iraqis' favorite shortwave station is the Arabic French run Radio Monte Carlo.

"The article describes how most Iraqis do

have access to the Internet but the government blocks anti-Saddam sites. And the cost of having the Internet in one's own home is too prohibitive. So the average Iraqi turns to shortwave radio for outside news. Nowhere in the article is the word 'shortwave' used, but the news writer Michael Slackman refers to 'scratchy radio' which is the way most Americans think of shortwave. It is interesting to note that with all the importance given to the internet these days that in a dictatorship it is still subject to manipulation and that people search around for other more traditional sources of news.

"I also have some comments on Harry Helms' guest editorial (*MT*, Nov. 2002). I disagree with him that digital HF broadcasting (DRM) is a waste of time. DRM would get rid of the one main complaint that Americans have about shortwave: poor sound quality.

"Next, he suggests that HF broadcasters should ask themselves what it is that they can do better than the Internet. Any suggestions? He doesn't give any.

"I do have one. Witness the importance shortwave played in the Cold War. And as the *LA Times* article suggests it is still playing a critical role in those dictatorships where the rulers try to control all sources of information. So shortwave still plays an important part in the Third World. However, within the developed First World I don't see anything that shortwave can do better than the Internet. In that

case it will only remain in the domain of DXers, hams and dedicated SWLs like myself."

— Tom Risher, Perris, Ca.

## The Silent Majority

Back when *Monitoring Times* held its own conventions, it was always hard to understand why, with a subscriber base of several thousand, our conventions remained only slightly larger than the SWL Winterfest. After seven years, we finally acknowledged it's just the way the hobby works, and we opted not to continue the conventions. However, we do rely on and appreciate the support of subscribers like Ron Martin, who sent this note along with his two-year renewal:

"Many thanks for your efforts with the magazine. Many of us look and listen, and don't say much. But I for one appreciate the love and flavor and balance of your authors and editors. Again, thanks,"

— Ron Martin, San Antonio, TX

We welcome your ideas, opinions, corrections, and additions in this column. Please mail to **Letters to the Editor**, 7540 Highway 64 West, Brasstown, NC 28902, or email [editor@monitoringtimes.com](mailto:editor@monitoringtimes.com). Letters may be edited for length and clarity. Happy monitoring!

— Rachel Baughn, KE4OPD, editor

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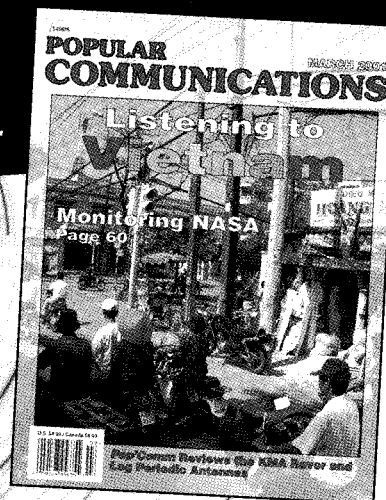
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## Testing Grounds for New Technology

Iraq has inadvertently become the proving grounds for a lot of technology developed and tested since the Gulf War. That technology is changing the way war is fought. According to L-3 Communications CEO Frank Lanza, the success of any system is to save lives, and he believes the way to do that is to take humans out of the equation as much as possible. "We'll get to the point where we don't have to commit people to unstable situations."

L-3 is responsible for much of the networking between ships, jets, and command stations, which, for example, made it possible for the first time to conduct a simultaneous air and ground war. Lanza admits the networking is viable in Iraq because only the U.S. and Britain have to be networked. A multilateral force would be much more difficult to coordinate.

Critical information arrives from numerous sources. The Army has been installing Movement Tracking System (MTS) satellite technology on 1,700 tactical wheeled vehicles in Kuwait. This system provides communications and tracking to help direct the movement of combat-service-support assets in the theater of operations, officials said. It provides e-mail capability to drivers, and a compact computer screen displays a "rolling map" designed to let operators know exactly where they are at all times.

"With all this I always know exactly where I am, where I'm going, and what plans have changed," said Pfc. Edward Hammond, an ammunition specialist with Co. D, 4th FSB.

In addition to tracking the supply convoys, the military tracks the content of each pallet of supplies. Pallets loaded in the U.S. are sealed with plastic sheeting and an itemized list of the contents is burned into a radio frequencies identification (RFID) tag attached to the pallet. This information goes into De-

partment of Defense computers. When the cargo is offloaded at an airfield, fixed or manual transponders, called "interrogators," will automatically read and log the tag. The supply pallet's destination can easily be changed with a keystroke.

The ability to remotely locate, track and communicate with troops and/or supply lines has given the war in Iraq an entirely different character than any we've seen before.

Lanza admits our dependence on software solutions introduces a new vulnerability – one that will require technology experts to think one step ahead to defend our technology.

## Satellite Beacons?

One technique almost certainly used by the U.S. to locate Iraqi military commanders is radio-direction-finding of monitored satellite telephone communications. Some concern has been expressed that when landline and mobile phone networks in Iraq were severed, the use of satellite phones by civilians and journalists might put them at increased risk of accidental attack.

"Any satellite telephone is an emitter," said Loren Thompson, a defense analyst with the Lexington Institute in Arlington, Va. But distinguishing friend from foe based on a signal alone could prove difficult, he said. "It's just yet another thing journalists now have to take into account," said Kate Adie, a British Broadcasting Corp. radio journalist.

## Cuba may put dissidents on trial

Cuba said in mid-March it will try dozens of dissidents it has accused of being traitors for allegedly working with the top American diplomat on the island. The U.S. Interests Section distributes shortwave radios and a wide range of books and pamphlets throughout Cuba with the stated purpose of promoting American culture, democracy and human rights.

The biggest crackdown on internal opposition in recent years came as Fidel Castro's government stated that it was restricting U.S. diplomats from traveling freely around the island. Veteran human rights activist Elizardo Sanchez said that he had confirmed 24 detentions around the island and was working to confirm reports of 10 more.

Opposition activists fear that those arrested will be tried under the much-criticized, but never-yet-applied "Law against National Independence," which carries sentences of up to 10 years. The law passed in February 1999 made it a crime to publish "subversive" materials provided by the U.S. government.

## Agreement reached on 5 GHz Wi-Fi

Untethered access to a high-speed Internet connection is on the horizon via Wi-Fi (802.11 wireless local area networks, WLAN). This increasingly popular wireless access comes in two basic protocols: 802.11a and 802.11b.

The basic difference is that 802.11a is five times faster than 802.11b and operates in the 5 GHz band which is subject to less interference. The 802.11b variety operates in the crowded 83 MHz slice of the 2.4 GHz ISM band, while a 300 MHz slice of the 5 GHz band is being used for wireless networking.

A disadvantage of 802.11a is that its average cutoff distance is about 60 feet, about half that of 802.11b. A continuing problem with all 802.11 signals is security. A neighbor or someone driving by can easily tap into a wireless signal.

Researcher, Frost & Sullivan believes that there will be a migration to the 5 GHz band which allows for higher transmission speeds and has less interference potential. They forecast that IEEE 802.11a will replace 802.11b as the most popular WLAN standard over the next four years.

To assist in the migration, on January 31st

## BULLETIN BOARD

### May 3-4: Abilene, TX

Key City ARC hamfest and ARRL W Texas convention at the Abilene Civic Center (North 6th and Pine Streets), Sat 8-5, Sun 9-2; \$8 registration, talk-in 146.76. VEC testing 10:30 Sat. For more info email ka4upa@arrl.net, write KCARC, PO Box 2722, Abilene, TX 79604, call 915-672-8889, or visit <http://222.qsl.net/kcarrc/hamfest.html>

### May 3: Spartanburg, SC

Blue Ridge ARS Upstate SC Hamfest at the Piedmont Interstate Fairgrounds (Fairgrounds Rd), 8am-2pm, talk-in 146.610, 146.820; adm \$5. Walk-in VE testing (off site; check-in 10:30 a.m.), 2m fox hunt (Greer ARC). For more info, BRARS, PO Box 6751, Greenville, SC 29606; 864-859-8316; <http://www.brars.org>

### May 3: Huntington Beach, CA

American Shortwave Radio Club-ASWLC monthly meeting 12 noon (16182 Ballad Lane). Contact Stewart MacKenzie at 714-846-1685. All aspects of the radio hobby will be discussed. [wdx6aa@earthlink.net](mailto:wdx6aa@earthlink.net)

### May 16-18: Dayton, OH

Dayton Hamvention - <http://www.hamvention.org>

### May 24: Greenville, NC

Antique Radio Show and Sale at Kiwanis Club (177 Forelines Road, Winterville, NC); 8a.m.-3p.m.; free admission (inside table \$15, tailgate \$10). Sponsored by East Carolina Antique Radio Club: Contact Herman Schnur K4CTG, 3205 Brick Kiln Rd, Greenville, NC 27858; 252-752-2264; [heschnur@usa.com](mailto:heschnur@usa.com)



*An H-46D Sea Knight flies over the German container vessel, Warnow Trader, loaded with troops and equipment from the 4th Infantry Division in support of Operation Iraqi Freedom. (DoD photo)*

the U. S. military and the wireless industry reached a milestone agreement whereby more 5-GHz spectrum will be shared with government radiolocation.

The Dept. of Defense operates a number of radar systems in the same frequencies as the 802.11a standard (between 5 and 6 GHz) and DoD is worried that the cumulative effect of Wi-Fi 802.11a products will interfere with the military's use of radar. The Pentagon initially wanted to protect these radars by restricting the use of Wi-Fi gear to the 5.150 to 5.350 GHz segment already approved in the U.S., Japan and Europe.

Under the new compromise arrangement, the next generation of unlicensed wireless devices and radar will share the additional 5 GHz spectrum, but the devices will be designed to change frequency if they sense radar operating nearby. Dynamic frequency selection (DFS), a "listen-before-transmit" technology automatically moves wireless communications to another channel when it detects a radar beam on its current channel.

The U.S. position will now be modified to include an allocation to the mobile service in the 5470- 5725 MHz band. Interestingly, the 5-cm ham band begins at 5650 and extends to 5925 MHz, so there will be an overlap. It is available to the Amateur Service on a secondary, non-interference basis to the Government Radioloca-

tion Service.

The changes will now allow the U.S. to seek a mobile allocation at the ITU World Radiocommunication Conference in Geneva in June and July 2003.

— Fred Maia W5YI

## Experimental Licenses

In a March 24 report, the FCC allowed a number of very diverse experimental license applications. The full list makes fascinating reading at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-232432A1.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-232432A1.doc)

Here's one example: Sensor Technologies & Systems was allowed an experimental license to operate on 462.5875 MHz (a Family Radio Service frequency) in Angola, Illinois, and Big Sky, Montana, for test and development of animal detection on highways.

## Drama over the Scanner

For several hours on March 9th, Adams County, Wisconsin, residents with scanners sat listening to a drama rarely heard by the public outside of television crime shows. Thomas Kramer, 54, who allegedly shot and killed Deputy Michael Shannon, 32, took Shannon's portable radio after he was shot and spoke with Sheriff's Department officials, who tried to persuade him to give himself up.

When an Adams County dispatcher asked Kramer to contact the department by phone, Kramer told them he didn't have one. So for more than an hour, residents heard officers try to talk Kramer out of his residence.

"I pretty much heard the whole conversation on the scanner," said Lin Burdock in the town of Strong's Prairie. Adams County Sheriff Roberta Sindelar said most people in the county have scanners. "That's their No. 1 entertainment," she said.

Sindelard said the department has the conversation on tape, adding that she didn't think having it broadcast over the scanner hindered the situation.

*"Communications" is compiled by editor Rachel Baughn KE4OPD, from news and clipping submitted by our readers. Thanks to this month's intrepid reporters: Anonymous, NY; Robin Hartford, MA; Doug Robertson, CA; Brian Rogers, MI; Richard Sklar, WA; and via email: Brian D., Allan Henney, Rick Kissel, Fred Maia W5YI, Mika Makelainen, Jerry None, Laura Quarantiello, Allan Stern, Larry Van Horn, Dan Veeneman, Robert Wyman,*

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# New Voices from a Former Super Power

By Gayle Van Horn

**M**any a veteran radio hobbyist remembers his first radio intercept like it was only yesterday, and for those who started monitoring in the days of the Cold War, that first station was usually Radio Moscow. Those of us who listened to short-wave radio during that era will never forget the distinctive Midnight in Moscow interval signal.

In fact, it was almost impossible not to hear Radio Moscow at virtually any time of the day or night. In terms of stature, it was the largest broadcasting organization in the world. No special effort or equipment was needed to log Radio Moscow. You only had to tune through any of the international broadcast bands to hear its powerful signals. At the height of its existence, Radio Moscow targeted its programming to worldwide audiences in over 65 languages on hundreds of frequencies during the entire 24 hours period.

During the decades of the Cold War the Soviet Communist society and economy stagnated. That changed in the late 1980s when Party General Secretary Mikhail Gorbachev introduced "Glasnost" and "Perestroika." It was *Midnight in Moscow* and a new day and era were dawning.

This policy and other political events of the day eventually resulted in the splintering of the old Soviet Union into 15 independent republics. With this unprecedented breakup of the former Soviet Union, the radio enthusiast soon discovered that politics were not the only changes afoot. Broadcasting from the former super power had also changed.

Today, Radio Moscow is no more, its distinctive interval signal only a memory for short-wave radio listeners. In its place, broadcasting with limited hours/frequencies and scaled-down

language services, is the Voice of Russia.

Though the Voice of Russia has diminished, the break-away republics have expanded their broadcast operations, resulting in new stations and new challenges for radio listeners. For many, the collapse of the Soviet Union has broadened their listening opportunities to log and verify a multitude of stations from the region.

For the first time ever in *MT*, we now take a closer look at the current broadcast scene from this former super power and its satellite republics since the breakup. Please note that all frequencies are in kilohertz and all times are in UTC (Universal Time Coordinated).

## Armenia

Until its independence from the Soviet Union on September 21, 1991, Armenia was known as the Armenian SSR (Soviet Socialist Republic). During the late 1980s, Armenia and neighboring Azerbaijan began fighting over Nagorno-Karabakh, a primarily Armenian-populated region, assigned by the Soviets to Azerbaijan in the 1920s.

The ensuing conflict escalated following independence from the Soviet Union in 1991. By 1994, Armenian forces held not only this region, but a portion of Azerbaijan as well. Today, Armenian leaders remain preoccupied by this long conflict as the power struggle between Armenia and Azerbaijan continues.

From a broadcasting perspective, the **Voice of America (VOA)** does transmit from one frequency inside of Armenia – Tibetan to Asia 11790, 1400-1500. Reception reports for VOA broadcasts can be sent to: 330 Independence Avenue SW, Washington, DC 20237 USA. You can email your reports or send your schedule

request to [letters@voa.gov](mailto:letters@voa.gov). Real audio broadcast are available at <http://www.voa.gov>.

Religious station **Trans World Radio (TWR)**, broadcasts via the Kamo, Armenia, relay on 5855, 1655-1840; 6240, 1200-1215. Consult the Trans World Radio website <http://www.twr.org> for additional station schedules, languages and programming information. Reports for TWR broadcasts are sent to Trans World Radio, International Headquarters, P.O. Box 8700, Cary, NC 27512-8700 USA.

**Voice of Armenia** and **Voice of Russia** transmit from relays in Gavar, Armenia. Voice of Armenia in English; 4810 to Europe parallel 15270 to Asia; 0830-0840 Sunday; 4810 Europe, 1930-2100, 9960 to Europe; 2040-2100 Monday-Saturday. Reception reports with return postage are sent to Voice of Armenia, Radio Agency, Alek Manukyan Str. 5, 375025 Yerevan, Armenia. Website: State TV & National Radio parent organization: <http://www.expo.am/natradio>.

The Voice of Russia transmissions from Armenia include 9965 to South America, 0000-0100 Polish; 9965, 0100-0300 Spanish; 11510 to Africa, and 1700-1800 French. Send your reception reports for Gavar, Armenia and all Voice of Russia transmitter sites to: ul. Pyatnitskaya 25, Moscow, Russia 115326. If you want the transmitter location noted on your verification it must be requested, however,

The Voice of Russia continues to intermittently specify incorrect sites on verification cards, as well as on their HFCC registrations. Hobbyists might consider researching these sites on their own and follow radio logs or newsletters for more complete observations. Websites of interest include the Voice of Russia <http://>

## Azerbaijan

A nation of Turkic Muslims, Azerbaijan has been an independent republic since the collapse of the Soviet Union. As mentioned above, despite a cease fire, Azerbaijan has yet to resolve its conflict with Armenia. As a result, the economies of both sides have been hurt by their inability to make a peaceful resolution.

**Radio Dada Gorgud/Voice of Azerbaijan**, transmits from Gyanca. English is heard on 6110 parallel 9155 to the Middle East, logged at 1452-1456 and 1800-1830. The station replies to reception reports irregularly in English using the following address: Radio Dada Gorgud/Voice of Azerbaijan, Medhi Huseyin kucasi 1, 370011 Baku, Azerbaijan. Their website is part of the State TV and National Radio parent organization at <http://www.aztv.az>.

In 1997 it was reported by Clandestine Radio Watch that a low powered station calling itself the "**Voice of Justice**" signed on to the broadcast with an old and faulty transmitter 30 minutes twice a week. Previous logs have noted Voice of Justice at \*0730-0800\* Wednesdays from Azerbaijan. Claiming that local business sources fund its operation to promote peace, it broadcasts on Saturday on 9677.7. The Voice of Justice contact address is, Independent Radiostation Voice of Justice, Tigran Meds-Str.23 A, Stepanakert, Republic of Mountainous Karabakh, via Armenia.

Additional clandestine activity, mostly in Assyrian dialects and Arabic language, are beamed to Northern Iraq. These broadcasts are speculated to be transmitting from within Azerbaijan or Kurdistan.

For instance, the **Assyrian Democratic Movement** has been heard on 9155. This elusive and secretive guerilla-run radio station has been monitored at 1725 in the United Kingdom. **Voice of Assyrians ZOWAA**, and **Ashur Radio** use 9155 during the late mornings around 1600-1658 and late afternoons in North America.

## Belarus

After seven decades as a constituent republic, Belarus attained its independence August 25, 1991, from the Soviet Union. Since then, the Republic of Belarus has retained closer political and economic ties to Russia than any of the other former Soviet republics.

The most commonly heard station transmitting from Kalodiziscy is **Radio Minsk**. The English service is known as **Radio Belarus International** and can be heard at 0300-0330 (Sunday, Monday, Wednesday, Friday, Saturday) on 5970/



7210 to Europe; 2030-2100 (Tuesday) on 7105/7210 to Europe; 2130-2200 (Tuesday, Friday) on 7105/7210 to Europe. All programming shifts one hour earlier for the summer schedule period.

Reception reports with IRCs (International Reply Coupons) or mint stamps for return postage can be sent to Radio Minsk/Radio Belarus International, vul. Chyrvonaya 4, Minsk, Republic of Belarus 220807.

## Estonia

Situated in eastern Europe, bordering the Baltic Sea, Estonia attained independence in 1918, after centuries of Russian, German, Swedish and Danish rule. Forcibly incorporated into the USSR in 1940, their independence was regained August 20, 1991, with the collapse of the Soviet Union. The state of Estonia's economy is greatly influenced by developments in Sweden and Finland, the country's two major trading partners.

Unfortunately for shortwave radio listeners, Estonian radio does not transmit in the shortwave spectrum. Estonian is only audible in the FM broadcast band and on their home page using Real Audio at <http://www.ee.ee>.

## Georgia

Oil-rich Georgia encompasses two autonomous republics: Ajaria in the southwest corner, and Abkhazia in the northwest. Following the dissolution of the Soviet Union, the country was plagued by civil war and political upheaval in a breakaway region called Abkhazia. The economy, as well as severed trading ties with other Soviet republics, also contributed to Georgia's problems. Fortunately, the republic has now stabilized and adopted its first constitution.

**Radio Haha** (Our Radio) is a clandestine station promoting reconciliation between Georgians and Abkhazians, broadcasting in Abkhaz. This station claims it is a licensed, non-commercial Georgian broadcaster based in T'bils. Try monitoring 4875 on the following schedule 0400-0430 (Tuesday, Friday); 0500-0540 (Tuesday, Friday); 1600-1630 (Monday, Friday); and 1700-1740. Direct reception reports to the station program manager Mr. Zouurab Shengelia, Rustaveli Ave. 52, II Floor, Apt. 211-212, Tilisi, Georgia.

**Voice of Abkhazia**, a clandestine promoting independence from Georgia, broadcasts from Sukhum, Abkhazia, in the Abkhaz language, with 5-kiloWatt (kW). Monitors from Europe have observed this station on 9489.76 variable and 9495.75 at 0200-0300, 0400-0915. The station will probably adjust its summer hours to 0300-0815. Russian language letters may be directed to Yuri Kutarba, Deputy General Director, Abkhaz State Radio & TV Company, Aidgylara Street 34, Sukhumi 384900, Republic of Abkhazia via Russia.

An intermittent voice from this country is **Georgian Radio**. The English service transmits on 11805 to Europe, 0630-0700; 11910 to Europe 0830-0900; 11910 to Middle East 1630-1700; 6180 to Middle East 1830-1900; 11760 to Europe 1930-2000. Listen for its station identification, "This is the world wide broadcast from Tbilisi, Georgia."

Verifications from the station are sent erratically and slowly, and return postage or currency is helpful. Send your reports to Georgian Radio, TV-Radio Tbilisi, ul.M.Kostava 68, Tbilisi 380071, Republic of Georgia <http://www.geotvr.ge>.

## Kazakhstan

Bordered on the north by Russia and second only to it in land mass, the vast Republic of Kazakhstan has large reserves of petroleum and natural gas in the western Caspian Sea area.

The populace of Kazakhs comprise the largest ethnic group of the republic, and it has retained a presidential system of government since independence. In 1997, Astana (formerly Aqmola), located in northern Kazakhstan, replaced Almaty as the republic's capital.

Broadcast activity from Kazakhstan consists of clandestine station activity.

**Radio Dat** <http://www.datrado.com> and email [info@datradio.com](mailto:info@datradio.com), possibly transmitting from Sitkunai, Lithuania, has been on the air since August 20, 2002. Radio Dat, which in Kazakh means, "I demand a word," broadcasts programs irreverent of Kazakh President, Nursuultan Nazarbayev. It has been speculated that Radio Dat, may be supported by the Republican People's Party of Kazakhstan, founded by former prime minister Alezhan Kazhegeldin, who is living in exile somewhere in Europe. Glenn Hauser's *DX Listening Digest* recently reported the group behind Radio Dat as the Societ Pour la Democratie en Asie, with an address of Rue Jourdan 95, Brussels, Belgium 1060.

A large number of listeners have heard Radio Dat, but it does require some persistence to log. Russian and Kazakh languages have been reported on 9925 at 0100-0200 and 1500-1700. The station has also been heard using 9775 at 1500-1600. Listen for the English ID; "You are listening to Radio Dat, free radio for a free Kazakhstan."

The clandestine station **Democratic Voice of Burma** has been reported, though not confirmed, as using a transmitter within Kazakhstan, as well as in Norway, New Zealand, Germany and Madagascar. *Passport to World Band Radio* notes, "Programs are produced by Burmese democratic movements, as well as professional and independent radio journalists, to provide informational and educational services for the democracy movement inside and outside Burma." Verifications have been received using the address DVB Radio, P.O.Box 6720, St. Olavs Plass, N-0130 Oslo, Norway. Norwegian postage stamps should be enclosed to aid in getting a reply. Programming can be heard on 5905 at 1430-1530 in Asian dialects. The website <http://www.communicue.no/dvb> carries a Real Audio feed.

**Voice of Tibet** continues to be regularly reported since its premier broadcast in May 14, 1996. The station's main objective is to provide unbiased information and news to the Tibetans living under Chinese oppression in Tibet. Broadcasts are routinely jammed from China. Transmitting facilities and broadcasts are registered as follows: Almaty, Kazakhstan, on 15680 at 1215-1300 in Chinese/Tibetan; Dushanbe, Tajikistan, on 15645 at 1215-1300 in Chinese/Tibetan;



Tashkent, Uzbekistan, on 11975 at 1430-1515 in Chinese/Tibetan and 15400 at 1215-1300 in Chinese/Tibetan. Send reception report (with IRCs) to The Foundation Voice of Tibet, St. Olavs qt. 24, N-0166 Oslo, Norway.

## Kyrgyzstan

Kyrgyzstan, officially the Kyrgyz Republic, is located in eastern Central Asia, bordered on the north by Kazakhstan. The Kyrgyz are Turkic speaking people, although Russian and Kyrgyz continue to be spoken. The landlocked republic was known as Kirgizia under Soviet rule, and Russians continue to call it that today.

**Kyrgyz Radio** broadcasts via a transmitter at Krasny-Retcha, a military encampment in the Issk-Ata region, south of Bishkek the capital city. European shortwave listener Ankar Petersen has tentatively logged this station on 4050 at 0225-0340 and 1555-1750 in vernacular languages.

Additional reports list this station in English on 4010/4050 at 0100-0200 and 4010/4795 at 2320-2330, and in German on 4010/4050 at 1400-1430.

English or German reception reports should be sent to Talant Assemov, [trk@kyrnet.kg](mailto:trk@kyrnet.kg), (or) Ms. Baima Sutenova, Vice President of the Kyrgyz State TV & Radio Corp, Kyrgyz TV and Radio Center, 59 Jash Gvardiya Boulevard, 720300 Bishkek, Kyrgyzstan or via email at [meerim2002@netmail.kg](mailto:meerim2002@netmail.kg).

## Latvia

After a brief period of independence between the two world wars, Latvia was annexed by the USSR in 1940. In 1991, they regained their independence, although the last of the Russian troops did not leave until 1994. Chiefly populated by Latvians and Russians, the nation continues to revamp its economy and assimilation into various Western European markets.



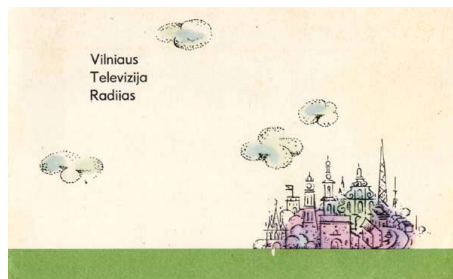
**Laser Radio** is a private shortwave station using a 100-kW transmitter in Riga, Latvia. English broadcasts are targeted across Europe every Sunday on 5935 at 1500-2100. When its shortwave broadcast isn't active, you may hear the Real Audio stream on line at <http://laserradio.net>. Laser Radio identifies with the slogan, "This is Free Radio in Action – Serving the European Continent via Short-Wave."

Laser Radio originally stated it was not going to issue verification (QSL) cards, but recently it has announced a policy change. Try sending your report to the following email addresses: [studio@laserradio.net](mailto:studio@laserradio.net) (or)

[mailtostdio@laserradio.net](mailto:mailtostdio@laserradio.net). You might also use this unconfirmed address of LaserRadio.net: BCM Aquarius, London WC1N 3XX, United Kingdom.

## Lithuania

Situated on the eastern coast of the Baltic Sea, Lithuania, Estonia, and Latvia are known as the Baltic States. In March 1990, Lithuania became the first of the Soviet republics to declare its independence, although it was not recognized until the next year, following the abortive coup in Moscow. Since the early 1990s, Lithuanians have strived to establish a free-market economy in place of the centralized economy of the Soviet period.



Transmitting via Sitkuai, Lithuania, is a relay of broadcasts from **WTJC** (Working Till Jesus Comes) based in Newport, North Carolina. WTJC is associated with Fundamental Broadcasting Network, a ministry dedicated to spreading the gospel across the world. The station's English broadcast is on 9710 to Europe on Saturday at 0800-0900 and Sunday at 1100-1200.

If you want a station verification from WTJC, enclose an SASE (Self Addressed Stamped Envelope) in your request for listeners in the United States or an IRC for those outside the U.S. Address your report to: Fundamental Broadcasting Network, WTCJ-Grace Missionary Baptist Church, 520 Roberts Road, Newport, NC 28570. Email reports: [davidwr@clis.com](mailto:davidwr@clis.com) Website: <http://www.fbnradio.com>

The English service of **Radio Vilnius** is audible on 7325 to North America at 0030-0100; 9710 to Europe at 0930-1000 and 9875 to Europe at 2330-0000. Radio Vilnius programming hours usually shift to one hour earlier for the summer schedule period. This station replies very slowly to reception reports, but persistence is usually rewarded with stickers and station souvenirs. Be sure to send return postage or IRCs with your report: Radio Vilnius, Lietuvos Radijas, Konarskio 49 Lt-2674 Vilnius, Lithuania.



## Moldova

Present-day Moldova comprises a large part of the eastern half of the historic principality of Moldova. Formerly ruled by Romania, Moldova became part of the Soviet Union at the

close of World War II. Although independent from the USSR, Russian forces have remained on Moldovan territory east of the Dniester River, supporting the Slavic majority population of mostly Russians and Ukrainians. This narrow region near Ukraine declared its independence in 1990 from the rest of Moldova and declares itself the Trans-Dniester Moldavian Republic (Pridnestrovskaya Moldavskaya Respublika in Russian). This region has never been recognized internationally.



**Radio Pridnestrovya** is a clandestine radio station from the breakaway republic of Transnistria, a self-proclaimed territory. The station uses a 150-kW medium wave transmitter in Maiaac and an FM transmitter in Tiraspol. It has been speculated, though not confirmed, that the English shortwave service

is transmitting from Grigoriopol. This site, located east of the Dniester River, was constructed by the former USSR and remains controlled by the Russians.

Radio Pridnestrovya broadcasts on Wednesday in English at 1659-1730 on 5960 to Europe. Its identification is, "Here is Tiraspol, the capital of the Dniester Moldavian Republic." The announced mailing address is Radio Pridnestrovya Moldavskaya Respublika (Radio PMR), ul. Rozy Liuksemburg 10, (MD-3300) Tiraspol, Moldova.

The **Voice of Russia** uses the Grigoriopol site for some of their transmissions. Listen to 7125/7180 to North America at 0000-0600; 1600-1900; 2030-2230 and 2300-0000 in German/Russian. Reports may be sent to the Voice of Russia address as previously noted above.



## Tajikistan

Tajikistan, formerly known as the Tajik Soviet Socialists Republic, has experienced three major changes in government and a five-year civil war since 1991.

Shortly after gaining independence, a civil war broke out between the Communist-dominated government and opposition groups. The two sides formally signed a peace accord in June

1997 that was implemented in 2000. With less than total control over some areas of the country, the central government has been forced to forge alliances among various factions. Today, Tajikistan continues to strive for economic development and national stability in this mountainous republic.

**Radio Free Asia (RFA)** was created in March 1996 as the Asia Pacific Network with funding from the United States Congress. The purpose of the RFA broadcast is to deliver accurate and timely news and information. Richard Richter, RFA President recently stated, "Our job quite simply, is to bring news and information about their own country to populations denied the benefits of freedom of information by their governments." More information can be found on the station's website at <http://www.rfa.org>.

RFA is reportedly using Tajikistan transmitters in or near Dushanbe in the following Asian dialects targeted to Asia:

Burmese	9355 1300-1400, 11535 0030-0130, 17495 0300-0700
Cantonese	11500 1400-1500
Mandarin	7455 1800-2100, 7540 2300-0000
Tibetan	7415 2300-0000, 7485 0100-0200, 7495 1500-1600, 7540 1500-2200, 11540 1100-1400, 17515 0600-0700
Uighur	7530 1600-1700, 9365 0100-0200, 17525 0300-0700
Vietnamese	7515 2330-0030, 9365 1400-1500, 15660 0100-0300

During a 1998 speech, the Clinton administration pledged to intensify efforts to unseat the current Iraqi leadership, and to do so with a regime more amenable to U.S. interest and goals in the region. Part of this effort was to be aided by the broadcast from Radio Free Iraq, a project of Radio Free Europe/Radio Liberty.

**Radio Free Iraq (RFI)**, broadcasts regular radio transmissions from U.S. backed Iraqi exiles. While the station cannot force political change, "it can be a catalyst for political awareness amongst Iraqis," said Rend Rahim Francke, Executive Director of the Iraqi Foundation. "You need to break the isolation of the Iraqi people." Nick Grace of *Clandestine Radio Watch* added, "Iraq is the hottest radio war by far with stations beaming alternative views."

RFI uses several transmitter sites. Their broadcast from Dushanbe is in Farsi and is targeted to the Middle East on 6150 at 1900-2000. Reception reports in English can be addressed to Radio Free Iraq-Radio Free Europe/Radio Liberty, 1201 Connecticut Avenue NW, Washington, DC 20036 USA.

RFE/RL: **Radio Europe Inc.** was established in 1949, as a means to broadcast news to countries behind the Iron Curtain. Two years later the **Radio Liberty** Committee Inc. was created to broadcast to the nations inside the Soviet Union. Both stations were funded by the U.S. Congress through the Central Intelligence Agency and private donations. In 1971, the CIA's involvement ended and all funding was transferred to the U.S. Board for International Broadcasting (BIB).

During the Cold War, the Soviet Union and

other members of the Warsaw Pact consistently jammed the broadcasts from Radio Free Europe/Radio Liberty (RFE/RL) transmitters. In 1988, Soviet leader Mikhail Gorbachev ordered the jamming ceased which allowed for a broader audience to hear RFE/RL. Critics assumed that with the fall of communism, the role of RFE/RL had been fulfilled and the organization would be disbanded. However, U.S. officials across the entire region have requested that the broadcasts should continue.

Currently, RFE/RL broadcasts in 32 languages (no English) targeted to eastern and southern Europe, Russia, Asia and the Middle East. Their programming is estimated to reach 35 million people, which includes regional news and commentaries, plus *Weekday Magazine*. RFE/RL is also gaining large audiences through the Internet. The multilingual website features both text and audio of all broadcasts available in Real Audio at <http://www.rferl.org>. RFE/RL transmits via numerous facilities and varied frequencies. An in-depth frequency schedule may be found at <http://www.rferl.org/shortwave/>.

RFE/RL's Tajikistan transmitters are targeted to Asia and broadcast with the following schedule: 0100-0200 and 1600-1700 on 4760 in Tajik; 1500-1700 in Kazakh on 4995; and 0200-0300 on 5035 in Kyrgyz.

RFE/RL is an excellent verifier and reports can be sent to: 1201 Connecticut Avenue NW, Washington, DC 20036 USA.

The national voice of Tajikistan, **Radio Tajikistan** transmits from Dushanbe; broadcasts in English to Asia are on 7245 at 0345-0400 and 1645-1700. Multilingual services from this station include Arabic on 7245 at 0400-0415 and 1700-174; and Dari and Farsi on 7245 at 0100-0345, 1400-1500, and 1600-1645.

English letters are accepted by Radio Tajikistan, preferably with return postage (IRCs). Although U.S. currency as high as \$5.00 has been known to be requested in order to receive a reply, this method of return postage is not recommended due to postal theft. You may want to include souvenir postal cards, stickers, and a self-addressed envelope to Radio Tajikistan, English Service, P.O. Box 108, Dushanbe, 734025 Tajikistan (or) Chapaev Street 31, 7340025 Dushanbe, Tajikistan.

Finally, the **Voice of Russia's** English programming may be heard from Tajikistan transmitters targeted to Asia on 4940/4965 at 1600-1700 and 17495/17525 at 0800-1000.

## Turkmenistan

Turkmenistan is a largely desert country with immense gas and oil resources, the fifth largest reserves in the world. Turkmens constitute the dominant ethnic group in the formerly Turkmen Soviet Socialist Republic. The current ruler is President Niyazov, who maintains absolute control over the country.

As with many republics, Turkmenistan broadcasts a domestic service on shortwave. **Turkmen Radio**, transmitting from Ashgabat, is heard in Turkmen via Radio-Home Service 1 on 5015 at 2045-2330 and 0000-0200. Turkmen Radio-Home Service 2 in English is broadcast to Asia on 4930 at 0840-0850; 5015 at 1300-1310

(Monday-Saturday); and on 4930 at 1540-1550 and 1940-1945.

Due to reported strict censorship, reports should be addressed only to the station and not a particular individual: National TV and Radio Broadcasting Company, Mollanepes St. 3, 744000 Ashgabat, Turkmenistan Republic. Enclose mint postage stamps for a reply from the station.

## Ukraine

The second largest country in Europe, Ukraine is also richly endowed in natural resources. In 1922, the Ukrainian Soviet Socialist Republic was one of the four founding republics of the Union of Soviet Socialist Republics. Although independence was gained in 1991 with the dissolution of the USSR, true freedom remains elusive, as many of the former Soviet elite remain entrenched.



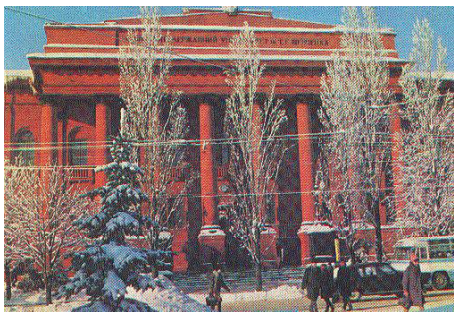
The largest national broadcaster from Ukraine is **Radio Ukraine International**. Their English service broadcasts on the following schedule: 5905/7375/9610 at 0100-0200 to Asia; 7285/7375/7420 at 0400-0500 to Asia; 11825/11840/13590/17760 at 1200-1300 to North America; and 5905/6020/7240/9560 at 2200-2300 to Europe. Radio Ukraine shifts its schedule one hour earlier during the summer broadcasting period.

Mail theft to the Ukraine has been a problem, especially those letters containing IRCs or currency, and reception report letters should be sent registered mail. The station prefers a minimum of three reports per envelope when requesting verifications. Return correspondence tends to be slow, but it is active and free stickers and station memorabilia are usually enclosed. The station mailing address is Radio Ukraine International, Kreshchatik str. 26, 252001 Kyiv, Ukraine. You can learn more about this station by visiting, <http://www.nrcu.gov.ua/>.



During the 1990s, the Hare Krishna religious sect began broadcasting a station, known as **Radio Krishnaloka**. According to one source Radio Krishnaloka broadcast from eastern Ukraine, but the exact location has never been confirmed. The station was active on the medium wave band on 963-kHz from Moscow and 1325-kHz from St. Petersburg. Reports from late 2002 observed them active on 7415, although the actual frequency varies from 7413-7418. First heard by radio listener Mikhail Timofeyev, the station





transmits at 0300-0500 and 1300-1500. At press time it is unknown if this station is actively broadcasting on-the-air.

The staff has requested reception reports which may be sent in English via email to Aradhana Priya [scsm@peterlink.ru](mailto:scsm@peterlink.ru). The Russian Hare Krishna website is at <http://www.harekrishna.ru/news/krishnaloka.shtml>. The postal address for the station announced on-the-air is, ul. Avtozavodskaya, dom 6, kvartira 24a, Moscow.

European monitors will have a better chance of hearing **Dnieper's Wave** on 11980 than their radio cousins in other parts of the world. *DXing Info* recently reported, "The station broadcasts from Zaporizhzhya, Ukraine, and uses the name Dniprovskaya Hvylya in Ukrainian, and Dneprovskaya Volna in Russian." According to Alexander Yegorov, Dnieper's Wave broadcasts on Saturdays and Sundays from 1000-1300 transmitting with only 100 watts. If you are lucky enough to hear this station you can contact them at Alex TV & Radio Broadcasting Company, 48 8th Bereznya St, Zaporizhzhya, 330068 Ukraine.

## Uzbekistan

During the Soviet Era, the Uzbek Soviet Socialists Republic excelled in intensive mineral and agriculture overuse, which left the land poisoned and the Aral Sea half dry. Independent since 1991, the country's current concerns include insurgency by Islamic militants based in Tajikistan and Afghanistan, and the curtailment of human rights and democratization. Uzbeks make up the majority of the republic's population. In the official language of Uzbek, the republic is called Uzbekiston Respublikasy (Republic of Uzbekistan).

The International Service of **Radio Tashkent** broadcasts in English beamed to Asia on 5955/5975/7135/7135/7215 at 0100-0130; 5060/5975/6025/9715 at 1200-1230; and 5060/5975/6025/9715 at 1330-1400. English to



Europe is on 5025/7105/11905 at 2030-2100; and 5025/7105/11905 at 2130-2200.

Correspondence to Radio Tashkent is welcome and should be sent to 49 Khorazm Street, 700047 Tashkent, Uzbekistan. Reports are usually confirmed with colorful QSL cards and station souvenirs.

Two international broadcasters are using Uzbekistan transmitter sites – **Radio Netherlands** and **Vatican Radio**. Both stations are good verifiers sending QSL cards and station memorabilia.

### Radio Netherlands

Address: P.O. Box 222, 1200 JG Hilversum, The Netherlands. <http://www.www.rnw.nl> Real Audio.

12070 to Asia at 1330-1425 in Dutch; 12070 at 1430-1625 in English

### Vatican Radio

Address: Radio Vaticana, 00120 Citta del Vaticano, Vatican City State. <http://www.vatican.va> Real Audio <http://www.wrn.org/vatican-radio>. 6210 to Europe at 1710-1740 in Russian; 9854 to Asia at 1445-1500 in Tamil; and 9865 to Asia at 1515-1600 in English.

## Russia

The Russian radio landscape has changed tremendously since the split-up of the former Soviet Union. The giant state-run broadcasting apparatus has disappeared from the radio dials. In its place we have a plethora of private domestic broadcasters. But conflict still rages within the Russian republic borders, and one doesn't have to tune very far on the radio dial to hear some of that action.



What began as a secessionist movement has evolved into a Chechen religious struggle, a Jihad in the Chechnya region of the Russian republic. **Chechnya Svobodnaya (Radio Free Chechnya)** is broadcasting from St. Petersburg, Russia, as part of the Russian Government Broadcasting Agency. Russian and Chechnyan have been logged on 5935 at 0300-0600; 7335 at 0300-0700; 9470 at 0600-1400; 11635 at 0630-1430; 15605 at 0730-1400; 7340 at 1430-2100; 7355 at 1500-1800; 7445 at 1500-2100; and 7305 at 1830-2100. Contact address: ul. Pyatnitskaya, d.25, 113326 Moscow. Email: Mikhail Timofeyev at; [pcd00342@mail.admiral.ru](mailto:pcd00342@mail.admiral.ru).

The Russian pirate radio scene activity has been expanding, according to Ukrainian listener Sergey Kolesov. "The majority of stations are going on the air to establish contact with similar

stations," says Sergey.

"Some are working in a group, a few stations from the same region are standing by on one frequency, the most powerful is calling all stations." Tune through the following frequency ranges from 1610-1800 UTC: 2850-3150, 2890-2930, 3900-3930, 6600-6660 and 10450-10470 kHz in both AM and USB modes. Some of the recent stations monitored include Radio Samorodinka, Russian Roulette, Radio Avtobus, Radio Student, Radio Partizan, Radio Dozhdik, Radio Diplomat, Radio B52 and Rado Svoboda.



## Russian Domestic Stations

Russian domestic shortwave stations, similar to those in other republics, broadcast programming primarily for a regional audience. Most stations broadcast in Russian or the language of the republic. Most will QSL correct English reports, and using mint postage stamps and a self-addressed-envelope is highly recommended.

### Adygey Radio/Radio Maykop (Armavir)

Address: Adygey Radio/Radio Maykop, ul. Zhukovskogo 24 352700 Maykop, Republic of Adygeya, Russia  
Russian 6120 1700-1800

### Amurskoje Radio/Amur Radio

(Blagoveshchensk)  
Address: Amurskoje Radio/Amur Radio, GTRK Amur per Svyatitelya Innokentiya 15, 675000 Blagoveshchensk, Russia  
Russian 6060 2100-1800

### Buryat Radio (Ulan-Ude)

Address: Buryat Radio/Dom Radio, ul.Erbanova 7, 670013 Ulan-Ude, Republic of Buryatia, Russia  
Russian/Vernacular 4795 2200-1800

### IBC Tamil (Novosibirsk)

Address: IBC Tamil, P.O. Box 1505, London SW8 2ZH United Kingdom  
Tamil 7460 0000-0300

### Kabardino-Balkar Radio Nalchik (site unconfirmed)

Address: Kabardino-Balkar/Radio Nalchik, ul. Nogmova 38, 360000 Nalchik, Republic of Kabardino-Balkariya, Russia  
Kabardin 7325 1730-1800

### Kamchatka Rybatskaya Radio

(Petropavlovsk-Kamchatskiy)  
Address: Kamchatka Radio, RTV Center, Dom Radio, ul. Sovetskaya 62-G, 683000 Petropavlovsk-Kamchatskiy, Kamchatskaya Oblast, Russia  
Russian 5910/7360 2300-0000 and 11980 0000-0100

### Khanty-Mansiysk Radio (Khanty-Maniysk)

Address: Dom Radio, ul. Mira 7, 626200 Khanty-Mansiysk, Khanty-Mansiyskiy Avt.. Okrug, Tyumenskaya Oblast, Russia  
Russian/Vernacular 4520 0000-2359

### Magadan Radio (Arman)

Address: RTV Center, ul. Kommuny 8/12, 685013 Magadan, Magadanskaya Oblast, Russia  
Russian/Vernacular 5940 1700-1300 and

7320/9530 1800-1400

**Mariyskoye Radio** (Yoshkar-Ola)

Address: Mariya Radio, Mari Yel, ul. Osipenko 50, 424014 Yoshkar-Ola, Russia  
Russian/Vernacular 6125/7200 0200-1700

**Murmansk Radio** (Murmansk)

Address: Murmansk Radio, Sokpa Varnichnaya, 183042 Murmansk, Murmanskaya Oblast, Russia  
Website: <http://www.sampo.ru/~tvmurman/radio/rmain.html>  
Russian/Vernacular 5930 0200-2200

**Perm Radio** (Perm)

Address: Permskaya Gosudarstvennaya Telekinoradiokompaniya, ul. Technicheskaya 21, 614600 Perm, Permskaya Oblast, Russia  
Russian/Vernacular 6030/6150 0000-1600 and 11650 1600-2230

**Pomor'ye Radio** (Arkhangelsk)

Russian/Vernacular 6160 0200-2200

**Radio Gardarika** (St. Petersburg)

Address: Radio Gardarika, Radio Studio Dom Radio, Ligovsk Propekt 274, 197002 St. Petersburg, Russia  
Russian 5920/5935 1700-2300 and 7420 1900-2130

**Radio Krasnoyarsk** (Krasnoyarsk)

Address: Krasnoyarsk GTRK, Tsentr Rossi, ul. Mechnikova 44A, 666001 Krasnoyarsk 28, Krasnoyarskiy Kray, Russia  
Russian 6085 2200-1800

**Radio Maryja** (Samara)

Address: Radio Maryja, Mari Yel, ul. Osipenko 50, 424014 Yoshkar-Ola, Russia  
Polish 7400 1600-2300 and 12060 0600-0900

**Radio Mix-Master** (Yakutsk)

Address: Radio Mix-Master, Office 1, ul. Oktyabr'skaya 20/1, 677027 Yakutsk, Respublika Sakha, Russia  
Website: <http://mixmaster.tk.ru> Real Audio  
Russian/Vernacular 6150 2000-1600

**Radio Radonezh** (Samara)

Russian 6245 1700-2000

**Radiostansiya Tikhoy Okean/Radio Station Pacific Ocean** (Khabarovsk)

Address: Radiostansiya Tikhoy Okean, RTV Center, ul. Uborevieha 20A, 690000 Vladivostok, Primorskiy Kray, Russia  
Russian 7210 0715-0800

**Sakha Radio** (Yakutsk)

Address: GTRK Respubliki Sakha, ul. Ordzhonikidze 48, 677007 Yakutsk, Respublika Sakha, Russia  
Russian/Vernacular 4395 2200-1700

**Sakhalinsk Radio** (Yuzhno-Sakhalinsk)

Address: GTRK "Sakhalin," ul. Komsomolskaya 211, 693000 Yuzhno-Sakhalinsk, Sakhalinskaya Oblast, Russia  
Russian 11840 0230-1800

**Tyumen Radio** (Tyumen)

Address: RTC Center, ul. Permyakova 6, 625013 Tyumen, Tyumenskaya Oblast, Russia  
Russian 4895 2300-1900

**Yakut Radio Yakutsk** (Yakutsk)

Address: GTRK Respubliki Sakha, ul. Ordzhonikidze 48, 677007 Yakutsk, Respublika Sakha, Russia  
Russian 7200/7235 0600-0900v  
Russian/Vernacular 4825 1900-1500, 7140/7200 2000-1600, 7345 2000-1600

## International Broadcasters in Russia

International broadcasters using transmitter sites within Russia offer the QSL collectors a chance to log and verify a wide variety of transmitter sites throughout the country. Although BBC does not verify, a detailed technical reception report of their transmission might possibly solicit a positive response. Other stations using Russian sites are easier to verify, but don't forget to ask that the transmitter site be noted on your verification.

Verifying stations using transmitters in St. Petersburg and Kaliningrad, such as China Radio International and Radio Rossii, may be confirmed directly from: World Band Verification QSL Service, Center for Broadcasting and Radio Communications No. 2 (Crr-2), ul. Akademika Pavlova 13A, 197376 St. Petersburg, Russia. Two IRCs are required for a reply.

**BBC World Service** (transmissions beamed to Asia)

Address: BBC World Service, Bush House, Strand, London WC2B 4PH United Kingdom  
Website: <http://www.bbc.co.uk>  
Irkutsk: 17710 at 0810-0820 in Hindi  
Moscow: 7385 at 1700-1800 in Mandarin  
Vladivostok: 12105 at 1100-1530 in Mandarin

**Bible Voice**

Address: Bible Voice Broadcasting Net, P.O. Box 200, Leeds, LS26 0WW United Kingdom  
Transmitter site: Armavir  
English: To Asia on 12035 at 0030-0130  
To Europe on 5975 at 0800-0915; 5880 at 1800-1900; 7435 at 1845-1900  
To Middle East on 7435 at 1700-1900; 5880/7435 at 1900-2000  
To North America on 9470 at 1900-1930

**China Radio International**

Address: China Radio International, 16A Shijingshan Street, Beijing 100040 China  
Website: <http://www.cri.com.cn> Real Audio  
Moscow: To Europe on 7170 at 2200-2300 in English  
Petersburg: To Middle East on 7130 at 1600-1700 in Arabic and 1800-1830 in Farsi  
Samara: To Europe on 7215 at 2030-2130 in French

**Deutsche Welle**

Address: Deutsche Welle, Raderbergguertel 50, D-50968 Cologne, Germany  
Russian address: Nemezkaja Wolna, Abonentnyj jaschtschiik 596, Glawpotschtamt, 190000 St. Petersburg, Russia  
Website: <http://www.dw-world.de> Real Audio  
Armavir: To Middle East on 5965 at 1800-1900 in Farsi

Novosibirsk: To Asia on 9470 at 2300-2345 in English

Petropavlovsk-Kamchatskiy: Beamed to Asia on 6205 at 1030-1055 in Mandarin; 15250 at 2200-2400 in German; and 21790 at 1000-1030 in Farsi

Samara: To Europe on 5945 at 1500-1900 in Russian

To Middle East on 17860 at 1000-1030 in Farsi  
Vladivostok: To Asia on 15600 at 0000-0100 in Russian

**Herald of Christian Science/WSHB**

Christian Science Publishing Society, WSHB-Cypress Creek, 1030 Shortwave Lane, Pineland, SC 29934 USA Website: <http://www.tfccs.com/>  
Transmitter site: Irkutsk  
English: To Asia/Pacific on 9880 at 1200-1300

**IBRA Radio**

Address: International Broadcasting Association, Box 396, SE-105 36 Stockholm, Sweden  
Email reports only: [hq@ibra.se](mailto:hq@ibra.se) Website: <http://www.ibra.org>  
Transmitter Site: Samara  
Arabic: To Middle East on 5935 at 2000-2115

**New Century** (ex Voice of the Tartarstan)

Address: New Century/Voice of the Tartarstan, ul. Maksima Gor'kogo 15, 420015 Kazan Tatarstan, Russia  
(or) QSL Manager, New Century, P.O. Box 134, 420136 Kazan, Tatarstan, Russia  
Transmitter Site: Samara  
Tatar/Russian to Asia and Europe on 9690 at 0700-0800; 11665 at 0400-0600; and 11925 at 0900-1000

**Radio Canada International** (Armavir)

Address: Radio Canada International, P.O. Box 6000, Montreal, Quebec H3C 3A8 Canada  
(or) 1400 boulevard Rene Levesque East Level B Montreal, Quebec H2L 2M2 Canada  
Website: <http://www.rcinet.ca> Real Audio  
Armavir: To Africa on 7425 at 2100-2159 in English  
Moscow: To Europe on 7430 at 1600-1629 in English

**Radio Netherlands** (Irkutsk)

Address: Radio Netherlands, P.O. Box 222, 1200 JG Hilversum, The Netherlands  
Website: <http://www.rnw.nl> Real Audio  
Irkutsk: To Asia/Pacific on 12065 at 0930-1125 in English  
Khabarovsk: To Asia on 9885 at 1330-1425; 13820 at 1030-1125; and 17570 at 2330-0025 all in Dutch  
Petropavlovsk-Kamchatskiy: To Asia on 7375 at 1330-1425 in Dutch

**Radio Vlaanderen International**

Address: Radio Vlaanderen International, B-1043 Brussels, Belgium  
Website: <http://www.rvi.be> Real Audio  
Armavir: To Europe on 15195 at 0600-0900 in Dutch

**GLENN HAUSER'S  
WORLD OF RADIO**  
<http://www.worldofradio.com>

For the latest DX and programming news, amateur nets, DX program schedules, audio archives and much more!





### University Network

Address: University Network, P.O. Box 1, Los Angeles, CA 90053 USA  
Website: <http://www.drgenescott.com> Real Audio  
Transmitter Site: Samara  
English to Asia on 9890 at 0000-0400; 9890 at 1800-2300; and 17765 at 0500-1500

### Voice of America (Irkutsk)

Address: Voice of America, 330 Independence Avenue SW, Washington, DC 20237 USA  
Website: <http://www.voa.gov> Real Audio  
Mandarin to Asia  
Irkutsk : 5905 at 1300-1500  
Novosibirsk: 7390 at 1300-1500

### Voice of the Mediterranean

Address: Voice of the Mediterranean/Radio Melita, St. Francis Ravelin, Floriana VLT 15, Malta (or) P.O. Box 143 Valetta CMR 01, Malta  
Website: <http://www.vomradio.com> Real Audio  
Komsomolsk: To Asia on 15560 at 0500-0600 in Japanese  
Moscow: To Africa, Europe and the Middle East on 7440 at 2000-2100 in English, 2100-2130 in French and 2130-2200 in German

### Radio Rossii

Russian language service transmitter sites, frequencies and times  
Irkutsk: 7295 2000-2300, 7440 0730-1600, 9700 2330-0700  
Kaliningrad: 9450 0300-0700, 15355 0730-1400  
Krasnodar: 5895 1630-2200, 7365 0200-0500, 12005 0930-1600, 12065 0530-0900  
Moscow: 5910 0200-0500/1530-2200, 5920 0200-0600, 6060 1530-2200, 6115 0200-0500, 7140 1830-2200, 7250 0530-1500, 7350 1730-2200, 7380 0200-0500, 9720 0630-1500, 98600530-0800, 11630 1530-1800, 12060 0530-0800, 13705 0830-1700, 17600 0830-1500  
Samara: 6125 0200-0500/1430-2200, 11990 0530-1400  
St. Petersburg: 5905 1400-2100  
Yekaterinburg: 7220 2200-1800

### Voice of Russia

The main international broadcaster from the Russian Republic is a descendant of Radio Moscow – the Voice of Russia.

The North American Service of the Voice of Russia broadcasts exclusively in English from 0200-0600. Programming includes a varied mix of news and analysis. For those listeners who want to learn more on Russia and its people, tune into the program *This is Russia*. This program includes segments on history, culture and the arts. The program *Kaleidoscope* is very popular with a focus on information and the latest information on the Russian Republic. Another equally popular program is *Moscow Mailbag*, hosted by Joe Adamov for 45 years.

To learn more about Joe's top rated show, and to get a complete listing, including times and frequencies, of all of the Voice of Russia's English language programming, refer to *MT's* Selected Programming Guide. Another way to monitor the Voice of Russia is on Real Audio via the facilities of World Radio Network (WRN) at <http://new.wrn.org>.

The actual locations of transmitter sites for the Voice of Russia is a constant challenge for the radio listener. The location of some of the sites have been determined by the study



of propagation characteristics, satellite photography, and sign-on procedures. For a detailed listing of sites by frequencies, consult *Klingenfuss Frequency Guide* or *Passport to World Band Radio*.

For a time, Voice of Russia ceased verifying reception reports with QSL cards, opting for email only verifications. Despite staff cutbacks and budget restraints, snail mail verifications appear to be making a comeback though email is still being used. Voice of Russia has indicated the transmitter site used for a specific broadcast/frequency on its QSL cards when requested, but this does not appear to be a widespread practice. Regardless of current practices, you should request in your reception report for the station to make such a notation of their transmitter site on the verification. Send your email letters to [letters@vor.ru](mailto:letters@vor.ru) (or) snail mail at ul. Pyatnitskaya 25, Moscow 11526, Russia. Return postage by IRCs or mint postage is encouraged. For language services other than English, listeners should contact the International Relations Department. To learn more about Voice of Russia refer to their website at: <http://www.vor.ru>.

The schedule below is the current Voice of Russia English language schedule available at press time. During the upcoming summer schedule period, many of the lower frequencies will be eliminated, and replaced with higher frequencies. Current information will be available in future editions our *MT*. As a reminder to regular Voice of Russia listeners, all programming will shift to one hour earlier for the summer schedule period.

### Voice of Russia English Language Schedule (by target area)

To Africa  
1800-1900 7335 9830 11510  
1900-2000 7335 7440 9875 11510

To the Americas  
2000-2200 17735

To Asia  
1500-1600 6205 7315 7350 9590 9875 11500  
1600-1700 4940 4965 4975 7305 9590  
1700-1900 9590

To Australia  
0600-0700 15275 17655 17665 21790  
0700-0800 15275 17665 21790  
0800-0900 15275 17495 17525 17665 17665  
0900-1000 15275 17525 17665

To Europe  
0600-0700 12010  
0700-0900 11820 12010  
0900-1000 11820  
1800-1900 7290 7340  
1900-2000 5950 6175 6235 7290 7340 7360  
2000-2100 5950 6175 6235 7290 7340 7390  
2100-2200 5950 6175 6235 7300 7340 7390

To Middle East  
1600-1700 6005 9830  
1700-1800 9470 9830

To North America  
0200-0300 6155 7180 9765 12020 13665 15445  
0300-0400 6155 7180 12020 13665 15445  
0400-0500 7125 7180 12020 13665 15595 17595  
0400-0600 12010 (Monday-Friday only)  
0500-0600 7125 7180 12020 13665 15445 15595

### Closing Thoughts

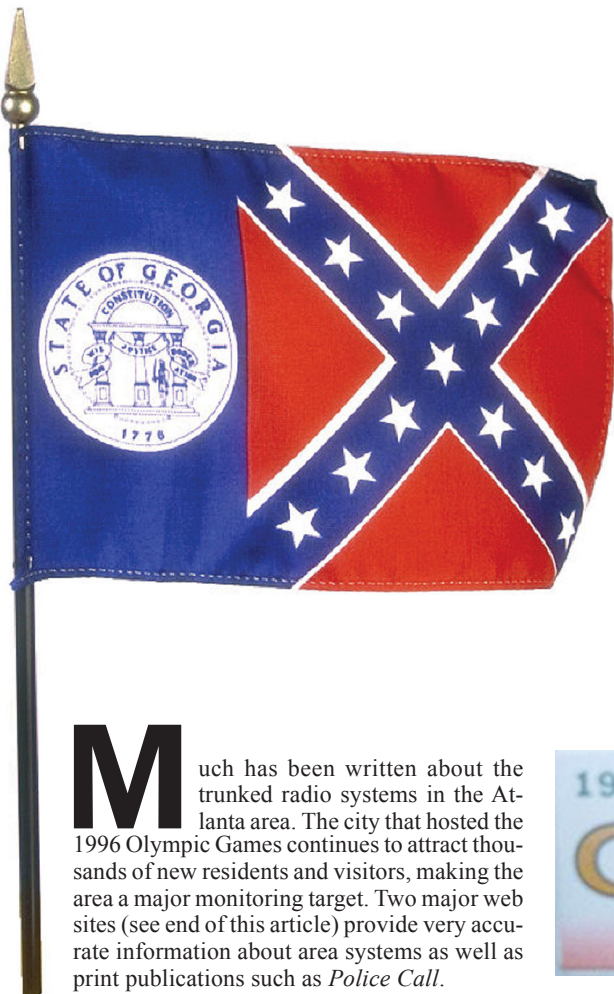
A feature of this magnitude would not be possible without the assistance from many sources. The author would like to thank the following for information used in this feature: Mark Fine, MT Frequency Monitor; Anker Petersen, Denmark/ DSWCI; Martin Schoech, Germany; Glenn Hauser, DXLD; Bernd Trutenau, Lithuanian DXplorer; Larry Van Horn, MT Assistant Editor; Harry Helms; Richard Richter, RFA; Rend Rahim Francke; Mikhail Timofeyer; Alexander Yegorov; Sergey Kolesov; Rumen Paknov, Sofia, Bulgaria-BDXC-UK; BC-DX; World DX Club; Radio Without License, Nick Grace, Clandestine Radio Watch; NASWA; NASWA Flash Sheet; Hard-Core-DX; ODXA; BCL News; Cumbre DX; *Passport to World Band Radio*; *World Radio TV Handbook* and *Klingenfuss Shortwave Frequency Guide*.

So what does the future hold for shortwave broadcasting from Russia and its break-away republics?

Will the Voice of Russia ever return to the dominance in the frequency spectrum once exhibited by its predecessor Radio Moscow? Will the republics broaden their respective voices? What new station can we expect to hear on the air?

We have witnessed dramatic changes in the state of broadcasting from the former Soviet Union – as dramatic as the end of the Cold War itself. You can rest assured that there will be more changes, just as there will be more *Midnights in Moscow!*





# A Conventional Look at Georgia

By John Mayson

**M**uch has been written about the trunked radio systems in the Atlanta area. The city that hosted the 1996 Olympic Games continues to attract thousands of new residents and visitors, making the area a major monitoring target. Two major web sites (see end of this article) provide very accurate information about area systems as well as print publications such as *Police Call*.

However, as many people are glad to point out, there's a lot more to Georgia than metro Atlanta. And there's a lot more to scanning than trunking in the Peach State. While more and more counties are switching to trunked systems, there is still a lot of conventional activity, even right in the middle of the Atlanta area.

This month we'll take a stroll down I-75. This Interstate is a major north-south thoroughfare and the gateway to Florida. Some of you from the Midwest might be taking this very Interstate on your summer vacation to Florida. Due to the heavy traffic and the sad fact it's also a conduit for illegal drugs, law enforcement keeps a sharp eye on the highway.

## The Georgia State Patrol

The Georgia State Patrol (GSP) patrols the highways of Georgia, enforcing traffic regulations along with other duties expected of law officers in Georgia. Drivers will notice the presence of their blue and silver Ford Crown Victoria Police Interceptors throughout the state. A few years ago the GSP used SouthLINC, a two-way radio service similar to Nextel. However, much to the excitement of Georgia scanner owners, they have returned to their conventional VHF frequencies for their highway patrol duties.

Output	Input	Description
154.680	154.800	Dispatch
155.910	155.190	Metro Atlanta Dispatch
154.905		Stateband
154.935		Stateband
458.4875		Mobile extenders

There is no CTCSS tone on the output of their



repeaters.

An obvious question is, what does GSP consider to be "metro Atlanta"? The rule of thumb is "if I-285 runs through it, the frequency is 155.910." (I really wish that rhymed.) In any case, Cobb, DeKalb, Fulton, and Clayton counties all use the 155.910 frequency. It certainly doesn't hurt to have both dispatch frequencies in your scanner.

In theory, all law enforcement departments in the state should have the stateband frequencies in their radios. Many agencies use 155.475 MHz as a car-to-car frequency. Make sure these three frequencies are in your scanner. Whenever I travel to Georgia I dedicate one bank for the State Patrol, the stateband, and mutual aid frequencies (VHF and 800 MHz) and scan it at all times.

## Catoosa County

As we leave Chattanooga, Tennessee, heading south on I-75 we enter Catoosa County, the Gateway to Georgia. On September 18, 1863, a gentleman named William Rosecrans visited Catoosa County. He ran into unfriendly locals, as he was a commander in the Union army. The following days were amongst the bloodiest of the American Civil War. Visitors can learn more about the battle and Rosecrans' Southern counterpart, Braxton Bragg, at the Chickamauga National Military Park.

Agency	Description	Output	Input	CTCSS
Catoosa County SO	Dispatch	159.150	153.815	107.2
Catoosa County FD	Dispatch	154.430	153.890	82.5
Catoosa County FD	Fireground	153.830	153.830	141.3

Catoosa County FD	TAC 2	154.370	154.370	107.2
Catoosa County EMS	Dispatch	155.265		136.5
Fort Oglethorpe PD	Dispatch	155.730	154.770	136.5
Ringold PD	Dispatch	453.875	458.875	156.7
Chickamauga National Military Park		168.325	167.075	173.8

## Whitfield County

Whitfield County is home to Dalton, Georgia, whose claim to fame is the carpet industry. But long before wall-to-wall carpeting, a minister in the Church of English named George Whitfield settled in northwestern Georgia.

Agency	Description	Output	Input	CTCSS
Whitfield County SO	Dispatch	154.725	156.030	114.8
Whitfield County SO		155.850		
Whitfield County SO		156.225		
Whitfield County SO		159.060		
Whitfield County FD	Dispatch	154.400	153.770	82.5
Cohutta PD	Dispatch	155.865	153.995	
Dalton PD	Dispatch	155.130	156.150	91.5
Dalton PD		154.890		
Dalton FD	Dispatch	154.010	156.105	100.0
Dalton FD		153.950		
Dalton FD		154.190		

## Gordon County

What could the Georgia Central Railroad and the Girl Scouts of America possibly have in common? Gordon County, Georgia. The county was named in honor of the first president of the railroad, William Gordon, whose daughter, Juliette Gordon Low, founded the Girl Scouts of America in 1912 in Savannah, Georgia.

Agency	Description	Output	Input	CTCSS
Gordon County SO	Dispatch	159.540	150.905	141.3
Gordon County SO	Channel 2	155.715		
Gordon County FD	Dispatch	155.640	154.830	141.3
Gordon County EMS	Dispatch	155.295	155.220	
Calhoun PD	Dispatch	154.0250	160.080	141.3
Calhoun FD	Channel 1	154.130	151.040	
Calhoun FD	Channel 2	153.860	153.860	

## Bartow County

As with so many counties in Georgia, Bartow County has a unique Civil War story.



In 1861 a young man named Pierce Manning Butler Young left his native Bartow County to travel to New York to attend the United States Military Academy. He became best friends with his roommate, George Armstrong Custer, who hailed from a northern state. After Georgia seceded, Young returned home to fight for his state. The two would later meet in battle in Virginia. Custer had captured a Virginia farmhouse and was just beginning his evening meal when Young led his troops in. Knowing his former roommate was attacking, he left word with the hostess to tell Young to enjoy the rest of his meal. The next morning Young reciprocated when Custer led his soldiers to recapture the farmhouse.

Young went on to serve as ambassador to two Central American countries, while his famous roommate met his fate at Little Big Horn.

Agency	Description	Output	Input	CTCSS
Bartow County SO	Dispatch	151.385	159.345	192.8
Bartow County SO		151.190	155.985	
Bartow County SO		159.300	153.755	103.5
Bartow County SO		155.010		
Bartow County SO		155.250		
Bartow County SO		155.730		
Bartow County FD	Dispatch	46.080		103.5
Bartow County FD		154.0100		
Bartow County FD		154.205		
Bartow County EMS	Dispatch	155.295	157.295	
Bartow County EMS		155.175		
Bartow County EMS		155.400		
Cartersville PD	Dispatch	151.265	153.875	103.5
Cartersville FD	Dispatch	154.205	153.770	

## Cherokee County

The county is named after the Native American tribe who once resided here. The residents of Cherokee County remained strongly pro-Union during the Civil War, but still saw Canton destroyed by General Sherman's Union troops.

Agency	Description	Output	Input	CTCSS
Cherokee County SO	Dispatch	158.730	151.310	
Cherokee County SO	Information	159.105	155.565	
Cherokee County SO		154.740		
Cherokee County SO		159.630		
Cherokee County SO		154.950		
Cherokee County FD	Dispatch	154.220		
Cherokee County FD		151.340		
Cherokee County FD		154.265		
Cherokee County FD		154.370		
Cherokee County EMS	Dispatch	159.4250	155.205	
Canton PD	Dispatch	155.085	154.740	
Woodstock PD	Dispatch	156.240		

## Cobb County

Welcome to metropolitan Atlanta. Until now we traveled without a trunk-following scanner. If you have one, get it programmed, because Cobb County is the most trunked county we will visit this month. However, we'll continue focusing exclusively on conventional systems. At the end of the article we'll list some excellent sources for trunked radio information.

## Fulton County

Fulton County was founded in 1853 and named in honor of either Robert Fulton, inventor of the steamboat, or an early railroad official named Hamilton Fulton. The county grew when bankrupt Campbell and Milton Counties merged into Fulton in 1932 and the city of



### Agency

Alpharetta Fire Department  
College Park Police Department  
College Park Fire Department  
East Point Police Department  
Fulton County Fire Department  
Hapeville Fire Department  
Hapeville Police Department  
Roswell Fire Department  
Union City Fire Department  
Union City Police Department

### Description

Dispatch 855.2125  
Dispatch 460.250  
Dispatch 154.265  
Dispatch 159.210  
Dispatch 154.325  
Dispatch 154.355  
Dispatch 158.850  
Dispatch 460.600  
Dispatch 154.295  
Dispatch 453.825

### CTCSS

162.2

## Atlanta Police Department

APD uses the City of Atlanta trunked system. However, they do continue to use two UHF frequencies.

Output	CTCSS	Description
453.250	103.5	ComNet
460.425	103.5	Turner Field

## Metropolitan Atlanta Rapid Transit Authority (MARTA)

MARTA owns and operates the bus and rail system in Fulton and DeKalb Counties. Monitoring MARTA is actually very interesting, particularly if you're riding it. I know a guy who takes his scanner on MARTA and makes statements like, "This train is about to break down," moments before it breaks down. He's really popular.

Output	Description
452.475	Police Chan. 1
452.675	Police Chan. 3
452.775	Rail East-West Line
452.375	Rail North-South Line
452.375	Rail Avondale Yard
452.825	Rail Station Managers
452.875	Rail Maintenance
453.725	Bus Chan. 1
453.700	Bus Chan. 2
453.775	Bus Chan. 3
453.875	Bus Chan. 4
453.950	Bus Chan. 5
453.925	Bus Chan. 6

*All frequencies use a repeater tone of 203.5 Hz.*

## Georgia Tech Police Department

The GTPD has talkgroups on the state trunked system that serves state agencies in the capital city. However, they primarily use their conventional frequency.

The 800 MHz channel is fairly weak and can only be heard in the immediate vicinity of the campus. Remember, when you put ten thousand engineering students into a small campus in downtown Atlanta don't expect *Animal House* – a good number of calls deal with minor thefts and parking infractions. (Before a bunch of angry slide-rule wield-

Roswell was ceded from neighboring Cobb County.

Both Atlanta and Fulton County operate trunked systems serving all facets of the city and large county. But there's still a lot to hear on the conventional frequencies.

ing nerds come beat me to death with their pocket protectors, I hasten to add that I was once one of the nerdy engineering majors graduating over a decade ago.)

Despite improvements made for the 1996 Games, Georgia Tech still has the dubious distinction of being one of the most dangerous college campuses in the nation and the GTPD find themselves facing situations more suited for large city police forces than a small university force. Go ahead and enter the GTPD frequencies, you never know what you might hear.

Output	CTCSS	Description
868.3125	D723	Police Dispatch

## Clayton County

A booming suburb of Atlanta, Clayton County is minutes away from one of the busiest airports in the world and is one of the most densely populated and urbanized counties in the state.

Agency	Description	Output	Input	CTCSS
Clayton County SO	Chan 1	158.730		107.2
Clayton County SO	Chan 2	158.895		107.2
Clayton County SO	Chan 3	158.940		107.2
Clayton County FD	Dispatch	453.300	458.300	107.2
Clayton County EMS	Dispatch	453.400	458.400	107.2

## Henry County

Most of metro Atlanta uses Motorola trunked equipment as do other cities and counties throughout the state. Henry County, however, chose EDACS for their communications needs. Their new system is up and running; however, much is to be heard on their conventional frequencies.

Agency	Description	Output	CTCSS
Henry County SO	Dispatch	154.755	123.0
Henry County PD	Dispatch	155.610	103.5
Henry County EMS	Dispatch	155.385	94.8
McDonough PD	Dispatch	159.150	100.0

## Spalding County

Spain once considered the area now known as Spalding County to be part of Florida. England later declared the land part of South Carolina. Today it's most definitely part of Georgia. In the early 1800s the Monroe Railroad passed through Spalding County and ended in a tiny town called Terminus west of Decatur. Residents of Decatur did not want a rail line in their city, so they created a suburb to their west that later was renamed Atlanta.





Agency	Output	CTCSS
Spalding County SO	154.650	
Spalding County SO	154.665	
Spalding County SO	159.030	
Spalding County FD	154.385	
Griffin Police Department	155.730	
Griffin Fire Department	154.310	114.8
Griffin Fire Department	155.730	123.0

## Butts County

On Christmas Eve, 1825, the state created a county in honor of Captain Samuel Butts, a veteran of many Creek Indian battles and the War of 1812.

Agency	Description	Output	Input
Butts County SO	Dispatch	159.645	150.875

## Lamar County

Lamar County was named for the very Roman sounding Lucius Quintus Cincinnatus Lamar who had served as a congressman and senator from Mississippi.

Agency	Description	Output
Lamar Co SO	Dispatch	155.595
Barnesville PD	Dispatch	155.595

## Monroe County

I-475 splits off of I-75 in Monroe County. Most Florida-bound drivers take I-475, since it bypasses Macon. Regardless of the route you take, you'll pass through the same counties and reunite with the other Interstate in southern Bibb County.

Agency	Description	Output	CTCSS
Monroe County SO	Dispatch	460.1750	88.5
Monroe County FD	Dispatch	154.2200	88.5
Forsyth PD	Dispatch	460.375	

## Bibb County

Bibb County has recently started using a Motorola Type II trunked system. These conventional frequencies may or may not still be in use when this article goes to print.

Agency	Description	Output	CTCSS
Bibb County SO	Dispatch	155.670	
Bibb County SO	Chan. 7	155.010	
Bibb County FD	Dispatch	154.250	
Macon PD	Dispatch	460.325	
Macon PD	TAC	460.275	
Macon PD	Information	460.450	
Macon PD	Detectives	460.500	
Macon FD	Dispatch	154.400	127.3

## Crawford County

Don't blink. I-75 passes through Crawford County for only about a quarter of a mile.

Agency	Description	Output
Crawford County SO	Dispatch	155.625

Crawford County FD	Dispatch	151.130
Roberta Police Department	Dispatch	155.655

## Peach County

We're now in Peach County in the Peach State. This county still utilizes a conventional VHF system for public safety.

Agency	Description	Output
Peach County SO	Dispatch	155.685
Peach County FD	Dispatch	154.235
Byron PD	Dispatch	155.790

## Houston County

Most everyone is familiar with the largest city in Texas. However, you will not make any friends here by pronouncing the county like the Texas city. The first syllable is pronounced "how." Houston County is home to Warner Robins Air Force Base.

Agency	Description	Output	CTCSS
Houston County SO	Dispatch	155.415	110.9
Houston County FD	Dispatch	153.890	88.5
Perry FD	Dispatch	154.355	141.3
Warner Robins PD		154.725	88.5

## Dooly County

We continue our trip down I-75. Vienna is the county seat of Dooly County. Both the city the county use VHF frequencies.

Agency	Description	Output	CTCSS
Dooly County SO	Dispatch	155.580	127.3
Dooly County FD	Dispatch	154.325	
Dooly County EMS	Dispatch	155.100	

## Crisp County

Crisp County now has a Motorola Type II trunked system. During a recent trip through south Georgia I noted the conventional VHF frequencies are still used. These frequencies might not still be used when this article goes to print.

Agency	Description	Output	CTCSS
Crisp County SO	Dispatch	159.450	94.8
Crisp County FD	Dispatch	154.220	
Crisp County EMS	Dispatch	158.775	192.8
Cordele PD	Dispatch	155.640	186.2

## Turner County

While it has not been used in over two decades, Turner County was the first county in Georgia to have its own flag. A flag with a white outline of Georgia on a field of dark blue with the location of Turner County marked flew across county offices, schools, and even Scouting events.

Agency	Description	Output	CTCSS
Turner County SO	Dispatch	155.730	186.2
Turner County SO		151.430	
Turner County SO		155.595	
Turner County SO		156.090	

## Tift County

Agency	Description	Output	CTCSS
Tift County SO		155.415	110.9
Tift County SO		155.550	110.9
Tift County SO		155.190	
Tift County SO		156.000	110.9
Tift County PD	Mobiles	155.325	91.5

Tift County FD		150.805
Tift County FD		154.160
Tift County EMS	Dispatch	155.325
Tift County EMS		155.265
Tifton FD	Dispatch	154.340
Tifton FD		156.135
Tifton PD	Dispatch	156.000
Tifton PD		155.190

## Cook County

Cook County now has begun using a Motorola Type II trunked system. I noted recently the county is still using their conventional VHF frequencies. These frequencies may not be in use when this article goes to print.

Agency	Description	Output	Input	CTCSS
Cook County SO	Dispatch	155.790	153.860	123.0
Cook County EMS	Dispatch	155.295		
Adel PD	Dispatch	155.190		
Adel FD	Dispatch	154.325		
Lenox PD	Dispatch	155.190		
Sparks PD	Dispatch	155.190		

## Lowndes County

Lowndes County has recently started using a Motorola Type II trunked system. These conventional frequencies may or may not be used when this article goes to print.

Agency	Description	Output	CTCSS
Lowndes County SD		154.740	107.2
Lowndes County SD		155.310	107.2
Lowndes County SD		155.535	107.2
Lowndes County FD	Dispatch	154.220	210.7
Lowndes County EMS	Dispatch	155.175	
Valdosta PD	Dispatch	154.740	
Valdosta FD	Dispatch	154.355	

If you need trunked radio information and have Internet access, be sure to visit:

<http://www.scanatlanta.com/> or  
<http://www.trunkedradio.net/>.

Have a safe trip through the Peach State.





# Of Boats, Trains and Trailers: Interesting QSOs

By Arthur R. Lee WF6P

**D**uring my nearly quarter century of being an amateur radio operator, I have spent many hours chatting with fellow hams throughout our United States and many countries of the world. Most of my QSO's – Amateur Radio contacts – were on voice, with less than half in Morse code. It was always a pleasant surprise when the other operator gave his QTH, or home location. Some were quite a prize for my log.

## Traveling with a Trailer

When my wife, also a ham, and I toured the country in our 26 foot trailer, I operated the HF radio nightly. While she was preparing dinner, I would set up our 40 meter dipole antenna. I had devised a 20 foot telescoping push-up mast, clamped to the side

lem was that of having late-arriving campers curling up in their sleeping bags on my guy wires.

On other auto trips without the trailer, I used a tri-bander bumper mount for HF contacts with my nets and friends back in California. I operated my Kenwood TS-440 HF rig, which was securely bracketed between the front seats on the floor. My wife got nervous when I operated CW from a key placed on the seat beside me. I assured her that I was actually more careful of my driving when pounding brass because I slowed down and paid more attention

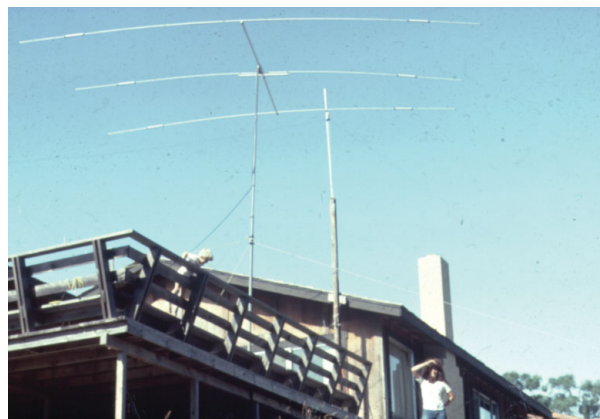
to the road and traffic than normal. I operated at about 10 to 12 words per minute and copied the code in my head. She jotted down call signs for me.

## Train Traffic

One very interesting QSO was with a friend Gene, KH6PP (SK), on 2 meters. We had pre-arranged a QSO between him on a passenger train heading down the coast from San Francisco, and me, driving up the coast from San Diego. We had not worked out a time to meet, although I knew his arrival time in San Diego. This was going to be

tricky, and I had almost put it out of my mind as being in the "too-hard-to-do" category.

Besides, I hadn't set up my 2 meter rig in my car. When we pulled over in a mall parking lot for lunch in Los Angeles, I hurriedly set a magnetic mount on our roof and, after purchasing some wire from a handy Radio Shack store, hooked the rig's power lead to the car's battery. Estimating the speed of the train at about 60 mph and working backward from the estimated arrival time in San Di-



*A tri-bander Yagi antenna concentrates a signal in a given direction for worldwide communications.*

ego, I figured that we would meet the train at just north of Santa Barbara before sunset. Not knowing which repeater we'd use, I decided on a long shot and would use simplex on the national calling frequency of 146.152. My wife put out a call every five minutes, then, as we got closer, every 2 minutes.

We were about to give up, expecting that the train had gone inland or between gorges and we missed it. Rounding a bend, we saw the headlight of a train as she called my friend's call sign. For some uncanny reason, at that very moment, my friend removed his hand held from his coat pocket and turned it on. Instantly, he heard my wife calling him! We had a 2 minute chat before we were both out of range and communications lost.



*The author, WF6P, operating his Kenwood 930-S from his home station.*

of the trailer. It was easy to erect and a simple matter to uncoil and run out both legs of the dipole. While the antenna was very low to the ground, I always achieved excellent results. My wife would go to bed in the early evening after dinner. Wearing earphones, I would relax, tapping out Morse code on a straight key for an hour or two.

There were two problems, however. One, my regular California 10p.m. schedule with a friend back in Arkansas became increasingly later as we crossed into succeeding time zones! After a full day on the road, 10p.m. became 11p.m. When we reached Maine, the schedule was an impossible 1a.m.! The other prob-



*The author's wife, AB6XJ, working ham stations from their Wilderness travel trailer while touring the USA.*



*Working from Maritime Mobile stations at sea can be fun and rewarding. Keeping track of boating friends is done through the connections in Maritime Mobile Nets.*



*While underway at sea, contact with families at home and friends ashore is a big morale lifter.*

## A Lifeline at Sea

I often crew for a friend of mine who is also a ham. This is his third boat I have crewed on, and he always has ham gear aboard. While crossing Monterey Bay on his 36 foot Grand Banks trawler *Zinfandel*, I asked his permission to go below and operate on Morse code. As HF has a nasty habit of getting into the autopilot circuits and causing us to turn in circles, he must first cut off the autopilot. Using only a 25 foot whip antenna, I began banging out "CQ, CQ, CQ" on Morse code. An operator with a strong signal and strange call sign came back to me. I surprised him when he learned I was operating Maritime Mobile from a boat in the middle of Monterey Bay, California. He surprised me even more by giving his location as a city in Romania – and this was before the fall of the Iron Curtain.

## Flying High

On another occasion when driving near Salt Lake City, I was on 20 meters voice, operating from our car. Hearing a station calling CQ, I came back to him. We exchanged the customary information as to signal strength, name and call signs. Then he told me he was a pilot flying a cargo C-130, en route to Oak-

land at 350 mph and at 30,000 feet directly above us. That QSO was a thrill for me as I had been an aircraft maintenance officer in a squadron of Navy C-130s.

This situation was reversed a year later when I flew with my son. He was the radio officer and navigator in a Navy P3-C aircraft and we were returning from Honolulu. He set up the spare aircraft radio to operate on 15 meters for me to contact my old friends on the Maritime Mobile nets. Now it was my turn to tell someone that we were flying at 30,000 feet and 100 miles out of San Francisco. My friends got quite a chuckle out of that as they made their unusual log book entries.

## Going Modern

While all of these experiences were both fun and somewhat unusual, the latest QSO I had topped them all. I received an email from my friend Zachary, KD6DXA, a student at the University of California, at Santa Cruz. Although he has a transceiver, an old Swan he had inherited from his grandfather, he had not yet set up an antenna from his college dorm room window. He asked if we would try 2 meters, as only a few miles separated us from each other. A lack of an external antenna from his dorm room limited his transmissions to the "rubber ducky" antenna of his handheld. Also, he could not hit our local amateur radio club repeater from his location. Using my base station and a "J pole" antenna, I could easily work the repeater, but this one-sided situation was unsatisfactory.

We then decided to go to 146.520 simplex as a trial. Yes, with my higher power and an adequate antenna, I came through loud and clear on his end but I had no copy on him. Aha! With our computers on, we exchanged Instant Mail (IM) on the

internet. With a couple of "Can you hear me now?" queries from me on 2 meters, it worked. Voila! I would talk to him on 2 meters and he would answer via IM. We carried on a 30 minute QSO in this manner. I had to remember to give my call sign every 10 minutes. To me, this was truly a different and unique mode of communications! Advancing technology was upon us.

Our immediate future plans are to set up his antennas – hidden, of course, from inquisitive eyes. A vertical for his 2 meter rig and an "invisible" 20 meter dipole for his ancient Swan transceiver should do the trick. We are both looking forward to many happy hours of CW rag chews. Zachary is a grad student teaching Philosophy and Logic, subjects I have studied in the past but desire to learn more about. I know it's going to be fun.



*Terry Parks, N6NUN, owner of the Hatteras 53 Hai Yan, frequently acts as Net Control for the Baja California Maritime Mobile Net on 7.238 (0800-0900 PST and PDT).*

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# “Operation Iraqi Freedom” Satellite Monitoring

by Robert Smathers

**W**ith a rude, early-morning wake up call to Iraqi President Saddam Hussein the dawn of March 20<sup>th</sup>, 2003, “Operation Iraqi Freedom” began, and news organizations around the world were ready with the latest broadcasting technology to bring the war into the world’s living rooms.

The videophone is the newest in cutting-edge broadcast technology. Why videophones? Admittedly, they provide low-resolution video reporting, but they *are* video reports rather than just audio reports. They are portable to allow for embedded (tag-along) reporters to file live reports without carrying around bulky, costly satellite newsgathering equipment. Videophones use satellite capacity that is neither C-band nor Ku-band, both of which may be utilized to full capacity, or there could also be a shortage of rentable satellite newsgathering vehicles and fixed satellite uplink facilities. Also, their low cost makes videophones popular when covering the war.

It takes two to three briefcase-sized units to transmit videophone transmissions and one rack-mounted unit to receive them: in total, the videophone unit, Inmarsat Global Area Network (GAN) portable satellite terminals, and the rack-mounted unit at the downlink site.

## The Videophone Route

News organizations such as CNN have taken advantage of the low cost of deploying videophones to outfit bureaus and reporters around the world instead of spending much more money to build full-blown satellite newsgathering vehicles. In the opening days of the war, CNN’s correspondents Walter Rodgers – following the United States Army’s 7<sup>th</sup> Cavalry 3<sup>rd</sup> Squadron – and Ryan Chilcote – reporting from the 101<sup>st</sup> Airborne Division – provided spectacular reports from the battlefield. CNN uses the “Talking Head” line of videophones by England-based 7E Communications, Ltd.

The 7E Communications Ltd. videophone unit weighs in at around 10 pounds and fits into a black plastic, waterproof carrying case that is 6 inches high, 14 inches wide, and 10.5 inches deep. Power can come from any 12V power source such as a cigarette lighter or camera battery. For war broadcasting, a “lipstick” camera or a mini digital video camera and a microphone are hooked up to the unit.

For edited packages, the mini digital video camera footage is downloaded into a laptop, the footage is edited, reporter voiceovers are added,

and the final edited product is sent to the videophone unit. The purpose of the videophone unit is to accept audio and video inputs, provide a mixer for setting audio levels, and compress the audio and video using one of various digital compression codecs.

The Inmarsat GAN terminal accepts the digital signal from the videophone and uplinks it to a satellite in geostationary orbit. England-based Ottercom’s Storm Inmarsat GAN terminal is suitable for use with the videophone unit. The Storm Inmarsat GAN terminal weighs 12 pounds and offers a 15-inch flat-panel antenna with a transmitter component measuring 15 inches wide by 15 inches deep by 3.5 inches tall. Using an internal rechargeable battery, the unit can transmit for 3 hours. By using a cigarette lighter for power, the transmit time is extended.



*Rack-mount codec unit at downlink site (Courtesy 7e Communications)*

It only takes a single 64 kbps/s Inmarsat data channel to send videophone transmissions. However, for better video quality, a 128 kbps/s (ISDN) data rate is frequently used. Since one Inmarsat GAN terminal can transmit a 64 kbps/s signal, two terminals are used to transmit a 128 kbps/s signal. Utilizing an Inmarsat Atlantic Ocean Region-East satellite at 15.5 degrees West longitude, CNN videophone transmissions can be downlinked by the London network bureau for editing and/or relaying to the Atlanta headquarters, or downlinked directly in Atlanta or the New York City network bureau.

More Inmarsat GAN terminals and a rack-mounted codec unit are used at the downlink site to receive the Inmarsat signal and decompress the digital video stream for editing or for broadcasting.

## A Digital Package Deal

Another recent technological advancement in the newsroom is the Pathfire Inc. Digital Media Gateway (DMG). The DMG delivers IP (Internet Protocol)-based packets of digitized video, audio and other content over satellite. Networks using the Pathfire DMG are NBC Newschannel, ABC NewsOne, and CNN Newsource. CBS Newspath uses a similar type of system from Bitcentral.

At network news headquarters, edited news packages, natural-sound news items, and short raw-video clips arrive by satellite feeds or from edit suites and are encoded into MPEG-1 and MPEG-2 files. Network news advisories, news item scripts, and other content are combined with these digital video files and sent out over the DMG system to file servers located at network affiliates around the country.

A computer interface shows a listing of all available content. The station personnel can select the item to preview video and read and print scripts and advisories. Video clips can be edited and recorded onto tape for use in newscasts.

The DMG is a special tool for use in heavy newsfeed situations such as the war coverage, as it saves wear and tear on tape machines recording inbound satellite feeds. The DMG system allows newsroom personnel to attend to other matters rather than having to keep track of what news feeds are incoming from many different satellites, or having to review hours of taped material daily and dubbing onto other tapes those items to be used in newscasts.

## What about the Satellite Hobbyist?

Both the videophone and Pathfire DMG systems are quite expensive or are not available for the home consumer to purchase and use. How can a home dish owner equipped with Ku-band participate in monitoring “Operation Iraqi Free-



*Ottercom Inmarsat GAN Terminal (Courtesy Ottercom)*



*"Talking Head" videophone used in the field (Courtesy 7e Communications)*

dom" newsfeeds?

Purchasing a consumer DVB digital video receiver allows access to many news feeds and international broadcasters. American and British networks operate bureaus in Kuwait City, Qatar, Jordan, Turkey, and Tel Aviv. In those locales, normal satellite uplinks have been set up. Unlike Operation Desert Storm in 1991, when only one or two analog video feeds could be sent per transponder, digital video compression technology allows for 5 to 10 feeds to be sent on a single transponder. Atlantic Ocean

Region Intelsats, New Skies Satellites, and Telstar satellites are used to transmit feeds from the various bureaus in and around the Middle East to news bureaus in London or the United States.

Domestically, the networks rebroadcast many of those feeds to their affiliates for monitoring or for use as live shots in newscasts. The most popular rebroadcasted feeds during the first days of the war were live, around-the-clock camera shots of Baghdad. There were two television cameras: one equipped with a nightvision scope and another one without.

Other rebroadcasted feeds seen are Iraqi TV, Al-Jazeera Television, and Abu Dhabi TV. Sometimes even Sky News or ITN News broadcasts are found. Satellite feeds also included live reports from Qatar and Kuwait City customized for major affiliated network stations around the country. Consult the table to find out where the network affiliate newsfeeds are located.

Abu Dhabi TV and Iraqi TV are both part of the Globecast World Television service on Telstar 5 Ku-band and are free with a consumer DVB receiver. Also free from Telstar 5 Ku-band are television services from Qatar and Kuwait. Al-Jazeera television is encrypted on Panamsat-9 C-band, but can be subscribed to using DISH Network's 18" DBS dish service.

With the advances in technology, both in broadcasting and the home satellite industry, coverage of "Operation Iraqi Freedom" is a lot more detailed and technologically involved than in Operation Desert Storm.



*Digital Media Gateway computer screen with listings of content to view, print, etc. (Courtesy Pathfire Inc)*

### Network Newsfeeds Available in the Domestic Satellite Arc

Network	Satellites, Transponders
ABC	Telstar 4 Ku, transponders 9 and 12 Galaxy 11 Ku, transponders 6, 12, 13, 14 15
CBS	Telstar 6 Ku, transponders 1, 3, 11
CNN	AMC-5 Ku, transponder 5 AMC-3 Ku, transponder 13
FOX News	Channel Telstar 6 Ku, transponder 24
NBC / MSNBC / CNBC	AMC-1 Ku, transponders 17, 19, 21, 23 AMC-2 Ku, transponders 2, 4, 8 SBS-6 Ku, transponder 12

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### \$50 Junk Shop AM Radio Challenge

**M**T reader Mark Rolland from Lincoln, NE, wrote recently, "...I spent many hours as a kid trying to pull in distant AM stations. It was low tech but a lot of fun. Do you remember a long range portable AM radio offered by Radio Shack in the late 1970s or early '80s?... As I remember these were great performing radios. Are you aware of a similar modern-day radio? Regardless of brand, I'm looking for a portable long distance AM receiver that is smaller than the CCRadio and possibly less expensive."

#### ◆ The Joy of AM DX

Ah yes, I, too, whiled away many a dreary winter night as a kid trudging back and forth from 520 to 1620 kHz logging everything I heard and firing off QSL requests to the new loggings the next day. I would like to have tuned the SW bands but such a receiver was financially out of the question and I was happy to make do with a Motorola clock radio my folks were about to trash because they had just bought a new-fangled transistor clock radio for the kitchen.

At the time I didn't know the first thing about propagation, solar cycles, or antennas. But, all the SWL information a kid would need could be found in the pages of *Popular Electronics* magazine. Other magazines of that time included updates of the venerable *White's Radio Log*, the closest thing to an official frequency guide for the AM band that anyone had access to.

Typical of table radios of that time, my old Motorola was tube fired, featured an on/off/volume control and a tuning knob which could whisk you from one end of the band to the other in half a turn. It couldn't have been less pretentious. It had only the built-in loop antenna shellacked on the Masonite backing of the radio. At night the tubes cast a wonderful orange glow on the wall directly behind the radio as the sounds of the nation's clear channel broadcasters rolled through the night to my listening post in central Florida.

The big guns from cities across the Southeast, Midwest

and the Northeast, as well as more difficult to hear regional broadcasters, could be pulled out with the patience of safe-cracker fingers. Once the tumult of the local broadcasters died down after sunset and the band began to open up, it was possible to visit just about any of those cities every winter evening. But, that's not all. International broadcasters came rolling through (including some split channel frequencies) which could be pulled out in between the Americans. I heard the Antilles, the Bahamas, Canada, Cuba, Belize, and Mexico with their massive 100 kW signals blowing in straight across the Gulf of Mexico.

What happened in the ensuing 35 years? Why is it our fancy, digital read-out, phase-locked loop, triple conversion, expensive radios don't seem to do as well? Here are just a few reasons for the current condition of the AM band. (1) There are nearly twice the number of AM radio stations on the band now than there were 35 years ago. (2) Most local stations operated on very low power, typically 250 to 1,000 watts. Now many locals operate between 5 to 10 kW. (3) Thanks to satellite-fed automation and cheaper-to-run than ever transmitters, stations which used to sign off at midnight now broadcast 24/7. (4) Many stations whose licenses require them to sign off at sunset are ignoring that stipulation and selling a few more hours of advertising each day (who's to know?). (5) Spectrum-wide electronic hash is generated

from dozens of common household devices such as computers, dimmer switches, and TVs in each home, plus the millions of extra high voltage transformers feeding our increasingly packed neighborhoods. The result is a din of signals swamping most receivers and a frustrating experience for those wanting to test the medium wave DX waters.

#### ◆ Dusting Off the '80s

After reading Mark Rolland's comments I started thinking about old portable radios I had owned and how they did seem to work well. Then I remembered that I have such a radio which has spent the last ten years running 24/7 as my music-on-hold source. I pulled it out of the corner and turned it on. All the pots had dirt in them, the band switch crackled and popped in the radio every time it was touched. So, I worked over all the pots and switches with a liberal application of Radio Shack Tuner/Control Lubricant (see review in August '99 *MT*). All the controls worked beautifully and with some close-up work with an old toothbrush, a linen cloth and a vacuum cleaner, it shone like a brand new radio (see photo).

This particular radio is a Realistic® DX-66 AM/FM/Air/SW radio made for Radio Shack in Korea. I contacted Radio Shack about the unit and was told that production of that model was discontinued in 1986. I remember buying it in 1982 when it was on sale for \$49.95 (\$10 off!). It measures 11-1/2" wide 10-1/2" high and 3-1/2" deep. It features a rotary band switch on the right side, an on/off/volume control and tone control, a "light" switch (which I remember never worked) on the front along with a large, 6-band analog, slide-rule tuning display. The back panel has access to the battery compartment (four 6-volt "C" batteries) and AC cord storage. It also has a Motorola external antenna jack. The left side has a 1/4" headphone jack. The top has a molded handle and a 29" telescoping whip antenna. The bands covered are AM/FM, Air (108-136 MHz) and continuous SW coverage in three bands



Realistic DX-66 circa 1982 and a Radio Shack AM Loop Antenna: uncomplicated AM DXing on the cheap. (Courtesy: Author)

from 3-26 MHz. All in all, a very nice portable radio which you might be able to find at a garage sale or junk shop for about \$10 to \$20.

### ❖ Riding the Waves with the DX-66

All radios benefit from assistant antennas, and I thought the Radio Shack AM Loop Antenna was the perfect match for this tabletop listening post. The Loop (see review *MT* July, '02) is cheap (\$30), takes up little space, is extremely easy to use and it's very effective. By rotating the loop and turning the tuning capacitor it's possible to null out electrical noise and adjacent channel interference on the AM band.

So, armed with a 21-year old portable radio, a Radio Shack AM Loop antenna, a writing pad, pen and cup of coffee, I sat down to tune in America. After a couple of hours I was very impressed with the results. I found that I could pick up all the great old stations with ease. For instance: 650 WSM, Nashville; 660 WFAN, NY; 670 CMBC, Cuba; 680 WPTF Raleigh, 690 CINF, Montreal; 700 WLW, Cincinnati; 710 WOR, NY; 740 CHWO, Toronto; 750 WSB Atlanta; 760 WJR Detroit; 770 WABC, NY; 780 WBBM, Chicago. Skipping up the band I logged 1000 WMVP, Chicago, 1010 WINS, NY; 1020 KDKA, Pittsburgh, 1030 WBZ, Boston; 1040 WHO Des Moines; and still further up the band 1180 WHAM Rochester (and, with the antenna rotated, Radio Rebelde, Cuba); 1190, WOWO, Ft. Wayne; 1200 WOAI, San Antonio; 1210 WPHT, Philadelphia.

It was gratifying to crank the old tuning knob, fiddle with the loop, and tune in these great old broadcasters. It happens that I still had the original operator's manual with this radio which includes a schematic diagram on the last page. It could be a lot of fun to do some experiments and modifications with this little radio, maybe add a BFO to tune the ham bands; see how the unit operates with various external antennas. But, as is, it's a delightful little AM DXer. And it's typical of any number of portable radios which you can find at any hamfest, flea market, yard sale or junk store for \$20 and under.

I recently saw a '60s no-name AM-FM portable in perfect condition in a junk shop which was picking up a local radio station in the store. It was beautiful with its genuine shiny metal speaker grill, tuning dial marked off in kilocycles and megacycles. Price tag? \$20. I also looked at the offerings on eBay.com and was impressed to see more than a dozen similar radios all selling for under \$20.

Now, of course, you can find vintage portables with a pedigree that are real collector's items and you can expect to pay \$100 and up for such models. But, here we're interested only in the vast sea of cheap multi-band portables which washed ashore by the millions in the '70s and '80s under brand names now completely forgotten. They do a great job tuning the AM band at a fraction of the price

you'd expect to pay for a current model. Yes, I know, you'll miss the digital read-out, the memory channel presets, the connections to recorders, the clock features etc. But, you can't beat the price and, anyway, it's fun to dust off these old workhorses and let 'em play again.

### ❖ The Beginner's Corner Challenge

If you'd like some fun DXing the AM band without the bells and whistles (and price tag), take this challenge: Run down to the local Radio Shack and buy the AM loop. Check out the local junk shops, flea markets, ham fests and yard sales and pick up an old multi-band radio. But, the challenge is this: you can't spend more than \$20 for the radio (OK, give or take a few bucks). The whole project should cost \$50 or less.

Now, send in the results of your efforts to the *Beginner's Corner* and share them with the rest of us. Incidentally, you'll find that the AM loop works well on the AM band of your big stereo tuner/amp as well as virtually any other radio which covers the AM band. The loop comes with a patch cord which can be attached to the receiver and into the back of the loop. You'll have to do that for any radio with a metal cover.

### ❖ Beginner's Mailbag

Bob Snyder, KB2EVU, a ham and avid SWLer, in responding to the January column on "Broadening Your Monitoring Horizons" wanted to know where to find an inexpensive multi-mode digital modem for \$50. Bob, Tigertronics makes a number of inexpensive multi-mode digital modems. Their most recent model is the Signalink which interfaces between your computer and your HF/VHF/UHF receiver. It copies PSK-31, RTTY, SSTV, APRS and, they claim, "...any of the dozens of other digital modes..." Price is \$50 plus shipping. It comes with a CDROM which I believe has the necessary software for reception on your computer.

They also make the BP-2M (see review in *MT* Dec. '99), a multi-mode modem which is plugged into your com port and the speaker jack of your receiver to display WEFAX, SSTV, RTTY, CW and many more. Cost is \$70 plus shipping. For more information on



*Back and Front views of Tigertronics Signalink which interfaces between your radio and your computer to copy PSK-31, MT63, RTTY, SSTV, APRS and dozens of other digital modes for \$50 plus shipping. (Courtesy Tigertronics)*

their products check out <http://www.tigertronics.com>.

Mike Agner of Capitol Hill Monitors writes, "...I saw your recent column on radio modifications...I edit the links pages for the Capitol Hill Monitors and I have a pretty nice list of links for mods at: <http://henney.com/chm/links/scanners.htm#MODELS>.

And, finally, Craig Cooper wanted readers to know about the web site he uses for satellite pass predictions: <http://www.heavens-above.com>.

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**Q.** *What services are illegal to monitor by the regulations set forth in the 1986 Electronic Communications Privacy Act?*

**A.** The long-standing regulations make it unlawful to listen to:

- cellular and cordless telephones
- pagers
- decoded privacy schemes like scrambling, encryption or spread-spectrum;
- FM subsidiary carrier systems (SCA);
- satellite studio feeds, broadcast auxiliary feeds and microwave point-to-point

**Q.** *Is a full-wave AM detector (two diodes) better than the normal half-wave detector (one diode)? While I am familiar with the use of diodes for power supply rectification, is there a better-quality sound with full-wave AM detection? (Roger Nash KE4EPO, Memphis, TN)*

**A.** No. In both cases – audio detection and power rectification – full-wave capture is done for efficiency or for voltage doubling, not quality. In power rectification, the voltage swings fully from zero to maximum on either half of the cycle; similarly, in audio detection, all of the original audio is present on either side of the carrier, so the only advantage of full-wave detection is higher-voltage audio, not better audio.

Since modern radios amplify the detected audio voltage, the amount of detected audio is not important; it was important, however, in the early days of crystal sets before the invention of the Audion, the first amplifying vacuum tube.

**Q.** *Why doesn't MT cover freeband radio?*

**A.** For several reasons, one of which is lack of interest among most readers who realize that freeband is so unpredictable and undisciplined. We couldn't do schedules, station profiles, identifications, or anything else that would justify a regular column.

So far as the FCC legalizing unlicensed use, it is already unlicensed, but for the normal 40-channels (26.965-27.405 MHz). The FCC has substantially deregulated the service, turning over enforcement to local law enforcement agen-

cies where the violations are occurring.

Since the US is a signatory to the International Telecommunications Union (ITU), the Federal Communications Commission (FCC) cannot condone the unlawful communications conducted over freeband (typically 25-28.3 MHz) because these illicit communications interfere with a variety of services regulated under international band planning.

**Q.** *Is it true that hundreds of news reporters are killed each year trying to get the news out to the world? Have you ever been threatened as a journalist for reporting the truth? (Donald Michael Choleva, Euclid, OH)*

**A.** The number of news reporters killed each year trying to get information to their readers may be in the dozens, but not the hundreds. Sources indicate that there are over 100 in prison worldwide, however, and many hundreds are attacked or threatened.

In my entire lifetime while a radio announcer, TV interview host and news anchor, and journalist, I've never received a threat, although occasionally a reader will cancel his subscription over an opinion that he doesn't agree with.

**Q.** *My Radio Shack PRO-26 scanner operates for only about two hours with fully-charged batteries before the low-battery alarm goes off; what could be wrong? (John Lucas, Sharpsburg, NC)*

**A.** If you have fully charged the batteries through the "Charge" jack for 10-18 hours with the radio switched off, then it may be any of the following:

1. There is some current still being drawn by the scanner even when switched off;
2. The low battery alarm circuit is prematurely activating;
3. The charger is not providing enough current to the charge circuit;
4. One or more of the AA cells is/are defective;
5. The scanner's charging circuit is defective.

Try this: Buy four new NiCd cells and charge them in an external charger. (Do you know anyone who has one of these? Will your

local Radio Shack do this for you?) After an overnight charge, insert them into the scanner and let it run to see how long they last. You may wish to sacrifice four new alkaline AA cells for the same test without the charging step.

If the alarm goes off again in only 2 hours, the scanner is defective, either because of excessive current drain or the improperly operating alarm circuit. If it doesn't, and lasts 4-5 hours, there's nothing wrong with the scanner or the alarm, although there could be something wrong with its internal charger or the AC adaptor/charger (Radio Shack recommends 9 volts at a current rating of no less than 300 mA).

Recharge the four AA NiCd cells again in your accessory charger (not in the radio), install them in the scanner, but don't turn it on for 2-3 days. When you do switch it on, see if it plays for 2 hours (that means the scanner is probably draining the batteries even when switched off), or whether it lasts for several hours (that could indicate that it's the scanner's charger circuitry).

**Q.** *Is it OK to use inexpensive bookshelf speakers for external speakers on scanners and shortwave radios?*

**A.** Absolutely, with the safe assumption that they are of similar impedance (4-16 ohms typically). This is the rationale behind the new Grove Enterprises SPK-03 speaker; originally intended in pairs for stereo entertainment systems, the speaker has excellent audio response. I'm using a pair of them along with a subwoofer on my own stereo system at home!

Reader William Scarsbrook has another suggestion: An inexpensive multimedia audio speaker set intended for computers. These have internal amplifiers and provide good sound when connected to the external speaker jack of a scanner, shortwave portable or desktop radio, Walkman-style CD players, or any other device allowing an external speaker or headset.

Questions or tips sent to Ask Bob, c/o MT are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of MT, or e-mail to bobgrove@monitoringtimes.com. (Please include your name and address.) The current Ask Bob is now online at our website: <http://www.monitoringtimes.com>

Gary Webbenhurst

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Spring is here! This is the best time for checking yard sales for hidden radio treasures. Any bright, sunny Saturday usually means a lot of opportunities. Often, there is a special ad section in the paper listing all the scheduled yard sales. Live in a big city? Head for the suburbs. You would be amazed at all the radios, and related electronic products you might find in a dusty cardboard box. If you cannot go, have your friends or spouse keep a sharp eye out. They can call you on the cell phone, or the radio, to see if you are interested.

Remember to take along some AA batteries, and perhaps a universal DC power source to power up the radios. Do they work? What can be heard? (Hint, tune to the VHF NOAA weather channel and its UHF link, or busy police channels to test for audio quality.) A missing antenna, or DC power cord is no problem for you, but the seller probably does not know beans about radio.

Even if the radio is not working, it might be good experimenter's project. I really enjoy taking an old non-working radio, and cleaning out the leaking batteries, etc. to see if it can be made whole again. I once bought an Icom handheld transceiver for \$10. Heck, the rubber duck antenna and battery were worth more than that.

If there is a large assortment of radio related items, offer them a sum for *all* the gear. They like to hear high amounts, rather than \$2 for that, and \$5 for this. Cash is King!

The good weather also means more ham swaps, hamventions etc. Of course the sellers are a bit more savvy. Many bargains can be found, and even new equipment is usually discounted by the major ham dealers on site. Oh, and don't forget about an occasional trip to the pawn shops. I prefer those over the internet auctions. I still like to hold the merchandise in my hand, and hear what it sounds like.

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Reader Bob writes that I still do some things the hard way. He was referring to my strategies for removing those small, frozen or difficult screws. He suggests a product called Redy-Loc. Bob insists this will really do the trick.

You are right, Bob; this, or a similar product would make the task much easier. Remember to give it a few minutes to penetrate the screw threads. Caution, though; an excess amount might seep into sensitive electronic components. Use such products very sparingly and try to blot up any excess fluids. Redy-Loc is available at your hardware store,

or through Dyna Systems at 1-800-336-0450. They also sell Thread Locker to make sure a thread does not come back out: Don't confuse the two!

Bob also reports that he followed an earlier bright idea, and uses a Tripp Lite inverter with a marine battery to manage his power needs for his receivers in the event of power failure, or for mobile operations. Thanks for the feedback, Bob.

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Wildland fire season is upon us. If you are a regular reader of this column, you probably know that my favorite listening target is the summer and fall wildland fire season. One can hardly imagine a worse season than last summer, but it seems to get worse every year. At any rate, I am finalizing my summer wildfire frequency list for Washington, Oregon, Idaho, and western Montana. If you live in any of these areas, please email me with a list of what's active in your neighborhood. Especially needed is information on British Columbia, and other Canadian forest fire frequencies.



*Tabletop scanners programmed for the summer fire season*

There are several yahoo groups that are "notification" services for forest fires in northern California, etc. You can do a search on Yahoo. My only complaint is that they started reporting every local auto, and house fire. I have no interest in those, so I started my own notification group at <http://groups.yahoo.com/group/Wildfires2003>. This is specifically intended to notify members of fast-growing wildland fires and their updates. If you are a Red Cross volunteer (I am) or an ARES/RACES responder, you might want to join this group. Remember that it is for WA, OR, ID, and MT only. If you are interested in other states, you can always start your own yahoo group notification service for your geographical area.

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I know this idea will generate some email. I predict a major change of paradigms for monitoring enthusiasts. There are two new developments which we

cannot ignore. Many new trunked radio systems are coming on line, and many of those are digital. Some are encrypted, and we will never be able to monitor these. Many of the Federal agencies have gone to Nextel, and are not capable of being monitored. Then there are those agencies remaining on the current VHF High, and UHF bands that are being assigned some of the new "splinter" frequencies made available by the FCC "re-farming" of those bands.

If you need a backup scanner for work, vehicle, or "Go Bag," the ensuing sell-off of conventional scanners can be a bargain. If you expect to use the scanner as your primary radio receiver, however, hold off purchasing a new model until the next generation can give you the big six:

1. Wideband receive 0.5-1GHz (excludes cellular but includes military air band)
2. New step sizes of 6.5 for UHF and 7.5 for VHF reception
3. Trunking capabilities, and digital ready
4. Better battery options
5. Computer programmable
6. 500-1,000 memory channels

Personally, I have made the decision not to buy any more radios, scanners, or amateur transceivers until the market produces the next killer radio. You know, the one with ALL the features above. I figure I will need to wait at least a year. In the meantime, the price of consumer level, non-trunking radios continues to fall. On the other hand, that new Icom R5 looks pretty interesting.....

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Considering a new radio? Check the Strong Signals website maintained by Rich Wells. Specifically, his reviews of new radios can be found at <http://www.strongsignals.net/access-reviews/reviews.cgi>. Additional reviews can be found at <http://www.eham.com>, and an index of reviews by Bob Parnass is at <http://www.monitoringtimes.com/html/mtscanrevu.html>. Remember to return from a dealer that would allow you to return the radio if not satisfied. (Yes, Bob Grove, I am very happy with my VR-5000!)

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Already added a new radio? Take photos, and record serial numbers. Check your homeowners or apartment renters insurance policy. Does it include radios, and similar electronics? Unsure? Time to call your insurance agent. ARRL members are eligible for special insurance coverage through the league.



### The Wireless Metropolis

**J**ust over one year ago, in the April, 2002 edition of *MT*, we featured hobbyist and communications veteran Gill Lineberry talking about past and future radio technologies. Gill's view of the future included the use of voice and data public safety networks and new public safety radio bands.

In the year since that column, the FCC has progressed significantly in the planning and regulatory stages needed before new bands and frequencies are adopted for use. Although most hobbyists are just getting used to having digital trunking receivers in the 800 MHz band, the next engineering challenge for scanner manufacturers may be emerging data technologies and new 4.9 gigahertz-range frequency allocations.

The GHz channels, between 4,940 and 4,990 MHz, will bring new transmission protocols and new uses for public safety radios. In the next two columns, we'll take a closer look at the changes being enacted for the spectrum above 1,000 MHz, plus provide a forecast toward new channelization plans in the familiar VHF and UHF public safety bands.

#### ❖ Enter the 4.9 GHz Band

The frequencies 4940-4990 MHz were re-allocated last year from Department of Defense and radioastronomy applications to public safety, for the purpose of broadband applications and other new technology.

This is part of an on-going initiative by Congress to identify spectrum that can be shifted, shared, or used more efficiently. Early this year, an agreement was signed which also enacts a greater level of coordination between what are typically "civilian" radio spectrum managers and their counterparts who manage government and defense spectrum allocations.

On January 31, 2003, the Federal Communications Commission (FCC) and the Commerce Department's National Telecommunications and Information Administration (NTIA) executed a new Memorandum of Understanding (MOU) on spectrum coordination. The FCC and NTIA already oper-

ate under an MOU dating back to October 1940, but a recent General Accounting Office report focused on the need for greater cooperation between the two spectrum policy organizations. The new agreement establishes procedures relating to frequency coordination, and stipulates that the Chairman of the FCC and Assistant Secretary for Communications and Information shall meet biannually to conduct joint spectrum planning.

The Communications Act assigns joint jurisdiction for spectrum management to the FCC and the NTIA at the Department of Commerce. The FCC is responsible for non-federal users, (e.g. broadcast, commercial, public safety, and state and local government users, etc.) and NTIA is responsible for federal users. However, the majority of spectrum is shared between federal and non-federal users, in which case the FCC and NTIA must coordinate spectrum policy.

The federal government is also tackling the issue of new technologies destined to use the better-managed spectrum. Originally prepared on February 14<sup>th</sup>, 2002 and recently re-released by the FCC, the following statement by FCC Commissioner Kathleen Abernathy summarizes the government's commitment to future public safety spectrum requirements. Again, from the FCC:

#### ❖ The 4.9 GHz Band Transferred from Federal Government Use

Today's Order begins to deliver on the Commission's new homeland security policy priorities. While public safety issues have always been important to the Commission, there is no doubt that this fall's events [Sept, 11<sup>th</sup>, 2001] created a new sense of urgency.

The allocation of the 4.9 GHz band, its designation for public safety, and the initiation of a service rules proceeding, signal this Commission's commitment to public safety and homeland security. Our long-anticipated decision has three important components: a national flexible allocation, broadband capability, and possible international harmonization. ...

**National Flexible Allocation:** The public safety community has long suffered under a fragmented spectrum allocation and service rule regime that limits the ability of various public safety entities to provide a diverse range of services across national spectrum bands. Today's 50 MHz allocation will lend itself to operations across traditional state and local boundaries and speed response times at emergency sites. I look forward to developing service rules that, like our approach at 700 MHz, emphasize the ability of emergency response service providers to communicate in a variety of ways and inter-operate across jurisdictions.

**Broadband Capability:** For too long, the public safety community has not had the spectrum capacity to deploy dedicated wireless broadband facilities. The spectrum characteristics and bandwidth at 4.9 GHz will allow the public safety community to utilize the latest technological tools – through real time video displays, Internet access, and other capabilities – in respond to emergency situations.

**International Considerations:** As we prepare for the 2003 World Radiocommunication Conference...the U.S. is examining the value of a possible global allocation for



*FCC Chairman Powell and NTIA Assistant Secretary Victory agree to spectrum coordination*

public protection use. Global harmonization creates significant advantages in the scale and scope of manufacturing for public safety uses – particularly vital because, by definition, this is a fairly discrete market for manufacturers. In addition to the commercial advantages, harmonization may also allow for possible interoperability in anticipation of security threats with an international scope.

Source: FCC

### ◆ The future is wireless

"I see in the future the increased use of PDAs (personal data assistants) with two-way capabilities. I think local, state and national wireless LANs (local area networks) are on the horizon. The position-reporting requirement for cell phones will be incorporated in the PDA for public safety. I think WiFi (wireless fidelity) is going to spread out of the coffee houses and onto street corners. We now have walk-up and drive-up ATM machines for banks...we'll have the same for WiFi and PDAs."

These predictions are courtesy of the aforementioned Gill Lineberry, now a recently-retired (sort of) public safety and communications official with a vision toward future technologies and frequency requirements.

"Look at the 'Hot Spots,'" Gill advised, referring to current efforts by Toshiba, HP and IBM to install wireless access points at businesses, transportation terminals, campuses, stadiums, and large residential complexes. These access points allow users to wirelessly connect to the Internet and their e-mail servers with WiFi-equipped notebooks, tablets, and PDAs.

The Hot Spots are also becoming an interesting marketing and planning tool. The connection may be free of charge, as an example, for patrons of a City Zoo as they walk around looking at exhibits. Along with wireless Internet connectivity, details of each animal and environment will be instantly available on a handheld device. In addition to free connections at certain facilities, subscription services are also emerging to bring more traffic into businesses. Starbuck's, McDonald's, and other restaurants are installing access points for their customers who wish to stay "on the net" consistently. Airlines are equipping frequent-traveler lounges. Hotels are connecting their rooms and guest areas.

### ◆ An access point on every corner

Where does public safety fit into this commercial model? According to Gill, there is a great infrastructure that has not yet been utilized. "Look at Portland (Oregon) and their own phone system," offers Gill, as an example of a city-owned, interconnected communications network that's currently being built to support new technologies. Gill believes that handheld public safety devices are on the horizon, using wireless access points along utility easements and municipal structures. The new 4.9 GHz band may be part of this technology.

"I long ago proposed interconnecting the Orlando and Orange County (Florida) microwave and fiber-optic systems." Similar infrastructure arrangements can be made across the entire coun-

try. "Back here in Orlando, throw in Orlando Utilities with its major fiber-optic lines and you could have the places to put your 'PDA updater' all over the place. How about if we put one where every fire hydrant is located?" Gill asked.

The idea of a wireless handheld device that provides text and graphic capabilities, plus the possibility of video feeds and even two-way audio, presents engineers and lawmakers with a daunting task. Vast amounts of radio spectrum are required, plus connection speeds fast enough to support multimedia content. Will a police officer's handheld "radio" of the next decade actually be an audio/video/sensor device capable of scanning fingerprints or transmitting video? Will a fire captain be able to look at a fireground unit to visually track firefighters, make assignments and study a floorplan?

"We don't need Automatic Vehicle Location (AVL) systems," Gill continued. "Just let the car tell the 'PDA updater' every time it passes a fire hydrant." In this mode, the PDA becomes a transponder and the access points become passive interrogators. Vehicle locations, unit status data, even vehicle fuel and maintenance information can be transmitted and updated in real time. If this sounds like a NASA flight, you're right. We can thank the space program and aviation industry for much of this technology.

### ◆ Catching up to science fiction

What can we expect to see in the public safety/local government sector? Take a look at these concepts under study:

#### **Police, Fire and Local Government functions in handheld devices...**

- ...two-way radio functionality
- ...AVL and GPS mapping information for officers and vehicles
- ...interoperability and interconnectivity to other agencies and jurisdictions
- ...on-scene video transmit and receive to/from dispatch centers
- ...sensors to monitor officer's health and welfare ("biometrics")
- ...sensors to monitor local environment for chemical/biological/nuclear contaminants

#### **Other Police functions...**

- ...database access for persons, vehicles, accident histories and stolen property
- ...on-scene video transmit and receive to/from other ground units and police helicopters
- ...on-scene tactical conferencing and diagramming (SWAT teams, etc.)
- ...sensors to scan and analyze fingerprints

#### **Other Fire-Rescue functions...**

- ...database access for hydrants, building hose connections, water pressures, etc.
- ...on-scene video transmit and receive to/from Command Posts and other units
- ...on-scene tactical conferencing and diagramming (fireground, etc.)

#### **Other Local Government functions...**

- ...database access for permits, licenses, fees, violations, etc.

...task-specific sensors for Public Works/Utilities, such as meter-reading, water quality testing and traffic flow analysis

### ◆ Data could pay off

Gill's vision includes a revenue generator to help pay for these tools: "The city/county can go into business and sell time on the wireless system. I used to be a free market guy and felt local governments should not get into business. Then I saw how the telephone and cable companies have gotten rich off of using local government easements...let the government make the money!"

"Sell the PDA service to citizens," Gill explained, "and then when they pass a fire hydrant it will tell them everything...if there is a pervert, or a gas leak, or if the water needs to be boiled in the neighborhood. Want to know where your kid is? Look at your PDA and it will display the last fire hydrant they passed...and if they are driving, it can even figure out how fast they proceeded between checkpoints."

"Is this 'Big Brother?'" Probably, but when Social Security numbers were issued...when computers were invented...when credit cards came into use...everything became Big Brother. You can't stop it now," Gill concluded.

Next month, we'll look more at recent radio spectrum and band assignment changes from one gigahertz to five gigahertz, plus provide a frequency list for the VHF public safety narrowband channels discussed previously in *MT*.

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## Scanning Canada's Lakes

**B**ack in the fall of last year I complained when my wife bought a new set of snow tires for her car. A long range weather forecast told of a very mild winter ahead, brought about by a resurgence of "El Niño." I guess El Niño failed to appear, because much of Canada had one heck of a dumping of snow over the last winter and by February I was eating large portions of humble pie and buying another set of snow tires for my daughter!

Most of the Great White North, the Land of the Ice and Snow, is still digging out from under the remnants of snow drifts so high that we thought they were the herald of a new ice age. Spring has finally arrived (but my snow-blower is still on standby, just in case) and our thoughts have turned from downhill skiing to water skiing. Yes, it's boating season again.

Canadians have a whole lot of water to play on. A little research uncovered some interesting trivia on the subject.

**Table 1: Canadian Water Trivia**

From the CIA World Factbook (they spend money studying Canada?)

Water area in Canada 755,170 sq km  
Length of coastline: 243,791 km

From the Atlas of Canada:

Number of lakes in Canada by region  
Territories – 11,544

Quebec – 8275

Prairie Provinces – 5381

Ontario – 3899

Atlantic Provinces – 1792

British Columbia – 861

Total – 31,752

From the University of Guelph:

Canada's 10 Biggest Lakes:

1. Lake Superior (82,100 sq km), Ontario

2. Lake Huron (59,570 sq km), Ontario

3. Great Bear Lake (31,153 sq km), Northwest Territories

4. Great Slave Lake (27,200 sq km), Northwest Territories

5. Lake Erie (25,700 sq km), Ontario

6. Lake Winnipeg (23,750 sq km), Manitoba

7. Lake Ontario (19,100 sq km), Ontario

8. Lake Athabasca (7,770 sq km), Alberta/Saskatchewan

9. Reindeer Lake (6,640 sq km), Saskatchewan/Manitoba

10. Nettilling Lake (5,699 sq km), Northwest Territories

Again from the University of Guelph:

1. The largest body of fresh water in the world is to be found in the Great Lakes.

2. The largest fresh water lake in the world is Lake Superior which is shared by Canada and the United States.

3. Canada's biggest lake (Huron) is also shared with the USA, but its Canadian area still earns it its title.

4. The world's biggest island in a freshwater lake is Manitoulin in Lake Huron.

5. The St Lawrence Seaway linking Lake Superior to the Atlantic Ocean is the world's longest inland waterway linked to the ocean. It is 3790 km long.

6. Canada's biggest lake not shared with the USA is Great Bear Lake in the North West Territories.

7. The deepest lake in Canada is the Great Slave Lake at 614 meters.

8. The highest major lake in Canada is BC's Chilko Lake which sits at an elevation of 1171 meters.

Little wonder that boating is a major pastime during the May to September timeframe. Unlike many resorts south of the border, we generally have to pull our boats out of the water during the winter and tow them to a storage facility. But when the summer sun turns the Canadian air 50 degrees warmer than it is in mid-winter, we climb out of our igloos and get out on the lakes in our canoes, powerboats, and just about anything else that floats.

Table 2 lists the VHF and UHF frequencies to scan when you are messing about on Canadian water this summer. Have fun; it will soon be winter again (anyone want to buy snow tires?).

**Table 2: Canadian VHF/UHF Marine Frequencies**

(from Canadian Government sources)

Channel	Tx	Rx
01	156.050	160.650
02	156.100	160.700
03	156.150	160.750
04A	156.200	156.200
05A	156.250	156.250
06	156.300	—
07A	156.350	156.350
08	156.400	—
09	156.450	156.450
10	156.500	156.500
11	156.550	156.550
12	156.600	156.600
13	156.650	156.650
14	156.700	156.700
15	156.750	156.750
16	156.800	156.800
17	156.850	156.850
18A	156.900	156.900
19A	156.950	156.950
20	157.000	161.600
21A	157.050	157.050
21B	—	161.650
22A	157.100	157.100
23	157.150	161.750
24	157.200	161.800
25	157.250	161.850
25B	—	161.850
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
28B	—	162.000
60	156.025	160.625
61A	156.075	156.075
62A	156.125	156.125



**Private boat on Lake Ontario**

64	156.225	160.825
64A	156.225	156.225
65A	156.275	156.275
66A	156.325	156.325
67	156.375	156.375
68	156.425	156.425
69	156.475	156.475
70	156.525	156.525
71	156.575	156.575
72	156.625	—
73	156.675	156.675
74	156.725	156.725
77	156.875	156.875
78A	156.925	156.925
79A	156.975	156.975
80A	157.025	157.025
81A	157.075	157.075
82A	157.125	157.125
83	157.175	161.775
83A	157.175	157.175
83B	—	161.775
84	157.225	161.825
85	157.275	161.875
86	157.325	161.925
87	157.375	161.975
88	157.425	162.025
WX1	—	162.55
WX2	—	162.400
WX3	—	162.475

Maximum power for VHF channels is 25W, but lower power (down to 1W) is usually used. Over water the range should be good.

### Onboard UHF frequencies:

457.525 457.550 457.575 457.600 467.525  
467.550 467.575 467.750 467.775 467.800  
467.825

Max power for UHF channels is 5W, but again the range over water should provide good monitoring.

### OPP Still Around

Scanning Canada reader Chris Pitre writes (re "A Monitoring Loss in Ontario" – Scanning Canada, March 2003):

"I received this month's issue of *Monitoring Times* and I am just writing to let you know that the O.P.P. can still be heard. I live in Windsor, Ontario, and I can receive them on an analog repeater frequency. I am using a BC-780 xlt. The repeater frequencies and the provincial trunked system can be found at <http://www.trunkedradio.net> under Bell Provincial Trunked System. The frequency for O.P.P. here in Essex County is 412.8875 and 410.8625."

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## US Changes Radio Rules as WRC-03 Approaches

**J**une's long-awaited World Radiocommunication Conference, better known as WRC-03, has many governments churning out stacks of documents, proposals, working drafts, agendas, and recommendations. Not to be left out, the United States Federal Communications Commission has issued a lengthy Report and Order cleaning up several loose ends left over from previous conferences as far back as 1979.

This document, released March 3, 2003, deals with all spectrum below 28 megahertz (MHz). It changes a number of minor radio regulations to bring them into line with international rules. While there's nothing huge, all the little stuff adds up.

### ♦ Maritime Service

The major change made by FCC is a final US adoption of what has long been a proposed international Navtex (Navigational Telex) channel on 4209.5 kilohertz (kHz). At long last, the US finally reserves this frequency for the Navtex system, which adds automated enhancements to the venerable maritime teleprinting mode known as SITOP-B.

The FCC has required that stations using this new frequency must follow the International Maritime Organization SafetyNet standards and procedures. Scheduling coordination will be done by the US government, presumably by or for the Coast Guard.

With any luck, this frequency will fill some gaping holes in Navtex coverage for us landlubber utility listeners. Navtex is great stuff, and a fine way to keep up with all kinds of things happening at sea. However, 518 kHz is not always the easiest frequency to copy above the noise floor using typical hobby equipment.

Some small changes have been made in the regulations governing simplex narrowband direct printing between ships and private coastal stations allocated in these ranges: 2107-2170, 2194-2495, 2505-2850, 3155-3400, 4438-4650, 4750-4850, 5060-5450, 5700-5950, and 7300-8100. The most noteworthy change is that the latter two will be on a non-interference basis with international broadcasting after 2007.

### ♦ Land-Mobile Service

Some clarifications have been made in use of what are, believe it or not, industrial and busi-

ness 2-way land-mobile channels around 25, 26, and 27.5 MHz. These are now non-interference as well.

While the 26 MHz allocation has gone to maritime use internationally, and a few US coastal stations are now using it, the FCC intends to continue the secondary use of several frequency-modulated (FM) channels in this band for broadcast auxiliary purposes. Loss of these would have reduced this industry's 26-MHz allocation by about half.

The FM channels in this range have become popular with local talk stations to broadcast undelayed program audio for accurate cueing of news and traffic reporters in the field. This causes no end of surprise every solar peak, when the worldwide skip opens up, and suddenly some local radio stations are being heard, however indirectly, over most of the planet's daylight side. Some of these stations have even taken to verifying reception reports. (See p.26 about legality issues - ed.)

### ♦ International Broadcasting

While not a utility matter in itself, the final adoption of the expanded broadcasting bands will affect utilities by coming at the expense of a few fixed and maritime allocations. Over a phase-in period ending in 2007, international broadcasting bands in the US will expand to include the following new segments (in kHz): 5900-5950, 7300-7350, 9400-9500, 11600-11650, 12050-12100, 13570-13600, 13800-13870, 15600-15800, 17480-17550, and 18900-19020.

Note that broadcasting has been crowding into these segments for quite some time anyway, and therefore the effect on utilities will actually be fairly minimal. Mostly, it means that US utilities will no longer be licensed in these bands, except in some cases with low power, and that, as we've mentioned, users at sea will be expected to avoid interference.

In addition, one existing band will be dropped. This is 25600-25670, which is internationally protected for radio astronomy.

FCC also changed a few technical standards for US-licensed shortwave broadcasters. Most notable is lowering of the maximum audio modulating frequency from 5 to 4.5 kHz, to conform with international practice.

### ♦ WRC-03 Agenda

A full-scale international radio conference, as put on by the International Telecommunication Union (ITU) of the United Nations, is a massive undertaking. WRC-03 was scheduled three years ago at a prior WRC in Istanbul, Turkey. Preparation started almost immediately. This time, it's in Geneva, Switzerland, starting on June 9 and running until July 4, a period of nearly a month.

Much of the utility-related agenda has to do with the continued fine tuning of the Global Maritime Distress and Safety System (GMDSS). This automated system relies primarily on satellites, but the previously discussed Navtex and narrowband direct printing systems remain essential parts of the mix.

The transition to all this automation has been neither smooth nor entirely safe. Many countries have proposed agenda items concerning the continuing (though lessening) problems with handling of distress alerts, as discussed in last month's column. There is also some concern over the rapid depletion of Maritime Mobile Service Identity numbers. These are a sort of second call sign used by every station accessing GMDSS.

Another relevant WRC-03 item is the "harmonization" of world broadcasting bands. This refers to a desirable goal of stations in different parts of the world all using the same allocations and regulations, which is certainly not the case now.

With any luck, we'll finally see a solution to the mess around 7 MHz. For years, amateurs, broadcasters, and utilities in different ITU regions have used different frequencies, guaranteeing a huge interference mess when radio waves refuse to stop at regional boundaries.

One plan calls for moving everyone into their own primary allocations. The 40 meter amateur band, where broadcasters in two ITU regions blast the third one into sheer noise, might be moved to 6900-7200 kHz, exclusive. This would, of course, cause problems with a lot of ham radios, but at least 40 would be a viable nighttime band again. The downside is that this plan would force a lot of utilities between 6900-7000 kHz to move, including some very sensitive military and government nets worldwide.

It will certainly be interesting to see what comes out of WRC-03.



## ABBREVIATIONS USED IN THIS COLUMN

AFB	Air Force Base
ALE	Automatic Link Establishment
AM	Amplitude Modulation
ARQ	Automatic Repeat Request teleprinting system
ARQ-E3	French ARQ teleprinting system
BPSK	Binary Phase Shift Keying
CAMSLANT	Communication Area Master Station, Atlantic
CAMSPAC	Communication Area Master Station, Pacific
CW	Morse code telegraphy ("Continuous Wave")
DEA	Drug Enforcement Administration
DSC	Digital Selective Calling
E10	Israeli phonetic English female numbers
E10a	Israeli phonetic numbers, callup-only or abnormal
EAM	Emergency Action Message
FACSFAC	Fleet Area Control & Surveillance Facility
FAX	Radiofacsimile
FEC	Forward Error Correction teleprinting system
HFDL	High-Frequency Data Link (air digital system)
HF-GCS	High-Frequency Global Communications System
JSTARS	Joint Surveillance Target Attack Radar System
LDOC	Long-Distance Operational Control
M8	Cuban CW, "cut numbers" ANDUWRIGMT
M8a	Three-message case of above
M18	Russian CW "Pseudo Time Station"
M22	4XZ, Israeli Navy or intelligence CW numbers
MARS	Military Affiliate Radio System
Meteo	Meteorological
MFA	Ministry of Foreign Affairs
MXC	Russian Single-Letter CW, in clusters
Navtex	Navigational Telex, automated safety broadcast
PACKTOR	Packet Teleprinting Over Radio
QPSK	Quaternary Phase Shift Keying
QSL	Confirmation of receipt; verification card
RSA	Republic of South Africa
RTTY	Radio Teletype
SITOR-A	Simplex Teleprinting Over Radio, ARQ mode
SITOR-B	Simplex Teleprinting Over Radio, FEC mode
UK	United Kingdom
Unid	Unidentified
US	United States
V2	Cuban Spanish female, "Atencion!" callup
V2a	Three-equal-message case of above
VOLMET	"Flying Weather;" Aviation weather broadcasts

All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kilohertz) and all times are UTC (Coordinated Universal Time). "Numbers" stations (encrypted, usually unidentified, broadcasts thought to be intelligence-related) are identified in ( ) with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

- 518.0 "P"-4XO, Haifa, Israel, with Navtex in SITOR-B at 0020. "H"-HZH, Jeddah, Saudi Arabia, Navtex at 0105. "R"-Monsanto Radio, Portugal, Navtex at 0250. "R"-Italian Coast Guard, Rome, Navtex at 0252. (Ary Boender-Netherlands)
- 2183.7 Unid-Maritime Rescue Coordination Center, Iceland, with an illegal DSC safety broadcast announcement (carrier frequency 2182, no DSC allowed), at 2304. (Day Watson-UK)
- 2618.5 GYA-UK Royal Navy, FAX weather chart at 2132. (Boender-Netherlands)
- 3270.0 CIO 2Z92-Abnormal Israeli intelligence callup (E10a), parallel on 4165 and 7605, at 2212. (Boender-Netherlands)
- 3591.0 HSP-UK military/diplomatic, Hanslope Park, ALE sounding at 2220. HFB-UK military/diplomatic, Hereford, also sounding at 2200. (Watson-UK)
- 3803.0 Unid-Russian military, with Moscow time strings (M18), CW, each minute at 1947, 1948, etc. (Boender-Netherlands)
- 4027.0 Cuban AM "Atencion" numbers (V2), in progress at 0304 and 0320. (Camillo Castillo-Panama)
- 4102.4 "1-Kilo"-Probable US Navy, reporting weapons status to Lima at 0603. (Ron Perron-MD)

- 4372.0 Giant Killer-US Navy FACSFAC, VA, coordinating Link-11 with "D-5-T," "D-7-I," and "X-1-T," at 0233. (Mark Cleary-SC)
- 4426.0 CAMSLANT Chesapeake-US Coast Guard, high seas weather using "Perfect Paul" computer voice, at 0352. (Cleary-SC)
- 4990.0 Coast Guard-1706-US Coast Guard HC-130, working a Navy warship with a man overboard, at 0430. (Allan Stern-FL)
- 5195.0 DRA5-Automated German amateur beacon/data station, Schegerott, testing the proposed 5 MHz amateur allocation, with quarter-hourly propagation bulletins in CW, RTTY, BPSK, QPSK, and RTTY again, at 2000. (Watson-UK) [QSL for this new beacon is to DK4VW@darq.de. -Hugh]
- 5517.0 Addis Ababa-Africa/Indian Ocean air route, working Khartoum, at 2238. (Perron-MD)
- 5616.0 UPS6703-United Parcel Service, HFDL position for Shanwick, at 2116. FX5455-Federal Express, HFDL position for Shanwick at 2126. (Patrice Privat-France)
- 5670.0 Flight Watch-Unknown military, discussing status of "Cobra 22" with two unid aircraft, one went "back to 2182," at 2227. (Perron-MD)
- 5696.0 "Avionics"-Probably US Coast Guard, radio check with Coast Guard 2139, at 0058. (Rick Baker-OH). CAMSLANT-US Coast Guard, working Coast Guard 6041 and Shark 11 on a search in the Bahamas, at 0227. (Cleary-SC)
- 5702.0 Architect-UK Royal Air Force flight watch, with Middle Eastern airport weather "colors" and VOLMET, at 2230. (Perron-MD)
- 6697.0 Beef Cake-US military, with a 28-character EAM, simulcast on 8992 and 11244, at 0039. (Jeff Haverlah-TX)
- 6796.0 Cuban "Cut Number" CW, 3-message callup and 5-letter groups (M8a), once at 0300, three times at 1202. (Castillo-Panama)
- 6840.0 AA1-Israeli military, sounding in ALE at 2231. (Watson-UK) [This frequency used to be the Israeli intelligence E10 numbers station. -Hugh]
- 6933.0 Cuban "Cut Number" CW (M8a), twice at 1202. (Castillo-Panama)
- 7527.0 TST-US Customs Service, NM, ALE sounding at 2005. (Watson-UK)
- 7611.0 FAAZBW-US Federal Aviation Administration, Boston, ALE sounding at 2135. FAAZNY-FAA New York, ALE sounding at 2136. (Watson-UK)
- 7889.0 Cuban "Cut Number" CW (M8a), eight times at 1302. (Castillo-Panama)
- 8097.2 Cuban "Atencion" station (V2), very loud AM signal with 5-number groups in progress at 0525, ended "Final, Final, Final" at 0546, carrier stayed up until 0559. New transmission began at 0600 (V2a), done at 0646, carrier down at 0658. (Dale Unger-MD)
- 8127.0 MIW 52-Abnormal Israeli intelligence callup (E10a), at 1615. (Boender-Netherlands)
- 8335.3 DHJ59-German Navy, Wilhelmshaven, working unknown vessel at 0036. (Baker-OH)
- 8397.0 UCMQ-Russian vessel *Mikhail Tcheremnykh*, traffic with Arkhangelsk Radio in 3rd-shift Cyrillic RTTY, at 1712. (Watson-UK)
- 8401.0 Unknown, possibly an oil rig, with local-time-stamped weather observations in SITOR-A, at 1728. (Watson-UK)
- 8494.7 "D"-Russian CW single-letter marker beacon (MXC), Odessa, also on 7038.7, 10871.7, 13527.7, 16331.7, and 20047.7, at 0904. (Boender-Netherlands) [Another listener, in the south central US, also heard "D" on 5153.7 -Hugh]
- 8495.0 "C"-Russian CW single-letter marker beacon (MXC), Moscow, also on 5154 and 7039 at 2004, plus 10872, 13528, 16332, and 20048 parallel at 0908. (Boender-Netherlands)
- 8573.0 CLA-Havana Radio, Cuba, CW marker at 0330. (Castillo-Panama)
- 8670.0 IAR-Rome Radio, Italy, CW marker "we listen 22 and reply on 17206.1" at 0332. (Castillo-Panama)
- 8677.2 CBV-Valparaiso Playa Ancha, FAX Antarctic ice chart, at 2229. (Watson-UK)
- 8764.0 CAMSLANT-US Coast Guard, working "A-2-J" at 2353. (Cleary-SC)
- 8885.0 Unknown-American Airlines flight with position for Lima Flight Support, at 0306. (Perron-MD)



- 8933.0 Cedar Rapids-Rockwell/Collins LDOC, IA, calling 29966, no joy at 2325. New York Radio, working United 966 at 2326, and Delta 118 at 2339. (Baker-OH)
- 8971.0 Western Sky-US Navy, North Island, CA, working several aircraft at 0152. Southern Fried and Trident, calling each other with no joy either way, at 0210. Fiddle-US Navy, Jacksonville, FL, working Cardfile 71 at 2203. Golden Hawk-US Navy, Brunswick, ME, working Wafer 21 at 2207. (Cleary-SC)
- 8983.0 NRDC-US Coast Guard Cutter Campbell, working distressed fishing vessel Karen Lynn 1, at 0030. (Baker-OH) CAMSPAC Point Reyes-USCG, CA, working Coast Guard 1700 and 1718, both on searches in the Pacific, at 0038. Coast Guard 01-USCG commandant's aircraft, working CAMSLANT at 2152. (Cleary-SC) Cutter Campbell working distressed vessel Caroline 1, at 2206. (Stern-FL)
- 8992.0 Reach Z1-US Air Force, patch via Andrews HF-GCS to Hilda East at 0330. (Cleary-SC) Death Blow-US military, calling Leo Lion at 1905. (Haverlah-TX)
- 9031.0 Cyprus Flight Watch-UK Royal Air Force, with aviation weather for Cyprus at 2319. (Perron-MD)
- 9153.0 Unid-CW 5-letter groups, sent URNID, then new message, at 1020. (Geoff Halligey-S. Wales) [M8a. -Hugh]
- 9281.0 RMP-Russian Navy, Kaliningrad, with CW 5-letter code groups, then called RIW, Khiva, Uzbek, who rogered the message, at 1120. (Halligey-S. Wales)
- 10075.0 United 942-Commercial flight making radio check with Houston, at 0007. (Perron-MD)
- 10125.0 Cuban "Cut Number" CW (M8a), at 0321. (Castillo-Panama)
- 10242.0 Service Center-US Customs Service, went to 11494, at 1353. (Baker-OH)
- 10315.0 DHN66-German Navy, Geilenkirchen, calling an unheard aircraft at 0529. (Haverlah-TX)
- 10344.0 Unid-CW 5-letter groups, signed off at 1138. (Halligey-S. Wales) [I suspect M8 again. -Hugh]
- 10345.0 Cuban "Cut Number" CW (M8a), twice at 03:03. (Castillo-Panama)
- 10871.9 "S"-Russian CW single-letter marker beacon (MXC), Arkhangelsk, also on 13527.9 and 16331.9, at 0904. (Boender-Netherlands) [The US listener also heard "P," Ustinov, in the 5, 7, 10, and 16 megahertz clusters. -Hugh]
- 11175.0 BALLQ-US military, patch via Hickam to Gun Shop (probable "Nightwatch" net), at 0523. Shuck 71-US Air Force E-3, patch via Lajes to LTAG (Incirlik, Turkey), at 1100. (Privat-France) "7-C-N"-US military, passing Exercise Esteem Highly Alpha message to "L-9-C" in a patch via Ascension, at 2054. (Haverlah-TX) King 22, patch via Keflavik to Minuteman Ops, Andrews AFB, at 2111. Snoop 55-US Air Force, patch via Salinas to a Saudi Arabian base, at 2129. Reach 6341-US Air Force, patch via Salinas HF-GCS for destination weather in the Middle East, at 2311. (Cleary-SC)
- 11181.0 Attentive-US military, calling Autograph Hound, at 1847. (Haverlah-TX)
- 11226.0 IKF-US Air Force, Keflavik, Iceland, sounding in ALE at 1425. (Watson-UK)
- 11229.0 Fall Fish-US military, with a 28-character EAM, simulcast on 8992 and 11244, at 1937. (Haverlah-TX)
- 11232.0 Sentry 42-US Air Force E-3C, patch via Canadian Forces Trenton Military to Raymond 22 (Nellis AFB, NV), at 0128 (Baker-OH). Razor 66 (E-8C JSTARS), patch via Trenton Military to Raymond 19 (Robins AFB, GA), at 1951. (Perron-MD) Razor 41, patch via Trenton to Raymond 19, at 2130. (Cleary-SC)
- 11244.0 Death Blow-US military, calling Leo Lion at 1913. (Haverlah-TX)
- 11384.0 N17133-Continental Airlines flight 001, with HFDL traffic at 1559. (Watson-UK)
- 11466.0 HR-Algerian oil/gas net, Hassi R'Mel, ALE sounding at 1944. (Watson-UK)
- 12335.0 116-Chinese diplomatic station, calling 101 in ALE, at 1338. (Watson-UK)
- 12579.0 NRV-US Coast Guard, Guam, with Persian Gulf weather in SITOR-B, at 1540. (Bob Hall-RSA)
- 12750.0 NMF-US Coast Guard, Boston, FAX surface chart at 1908. (Watson-UK)
- 13215.0 270047-US Air Force aircraft, ALE sounding at 1606. (Watson-UK)
- 13528.0 "C"-Russian Navy, Moscow, CW single-letter marker beacon (MX), at 1515. (Watson-UK)
- 13927.0 Reach 181-US Air Force, patch via MARS to Hilda East and Meteo at 0245. King 74, patch via MARS to Gabreski Air National Guard Ops, at 2320. (Cleary-SC)
- 14461.6 HEC94-SeaWave, Bern, Switzerland, CW markers every 3 minutes, at 1630. (Watson-UK) [Bern Radio offers HF e-mail now. -Hugh]
- 16331.9 "S"-Russian Navy, Arkhangelsk, CW single-letter marker beacon (MX), at 0807. (Watson-UK)
- 16421.7 RFTJ-French Forces, Dakar, Senegal, with ARQ-E3 traffic on circuit "TJF" (Dakar), at 0824. RFFCCC-French Forces, Lille, France, ARQ-E3 traffic for RFTJC, French Navy, Cap Vert (Cape Verde Islands), at 1505. (Hall-RSA)
- 16804.5 SQPP-Polish flag bulk cargo vessel Bataliony Chlopskie, calling unknown station in DSC at 0750. (Privat-France)
- 16972.0 JJC-Tokyo Radio, Japan, with an English newspaper FAX from Kyodo News, 60/576, at 1155. (Hall-RSA) [This is actually a good little newspaper. -Hugh]
- 17323.0 Unid-Impromptu maritime French-speaking net with vessel locations off West Africa, and administrative traffic for seamen, at 1459. (Perron-MD)
- 17991.0 DHM 91-German Air Force, Muenster, working aircraft "227," went to frequency "Mike" (11217), at 1809. (Perron-MD)
- 18000.0 Bigia-Spanish Air Force, trying to find a usable frequency for Lince 10, in Spanish, at 1607. (Perron-MD)
- 18220.0 JMH5-Tokyo Meteo, with FAX weather charts at 1212. (Watson-UK)
- 18233.0 Unid-Female voice with 5-number groups in English, at 1421. (Perron-MD) [Numbers, but ??? -Hugh]
- 18594.0 J15-US Customs Service, sounding in ALE at 1651. CS9, US Customs, sounding in ALE at 1710. UCG, sounding at 1733, PR1, sounding at 1734. (Watson-UK)
- 18784.0 V5G-Romanian MFA, Bucharest, encrypted FEC traffic at 1001. (Watson-UK)
- 19000.0 T7W 00A-US military, possible intercept training exercise traffic with T7W 11, at 1430. (Tom Seavart-KS)
- 19036.5 Unid-Algerian embassy, Accra, Ghana, with a long message in French to Algiers MFA regarding the Ivory Coast military situation, in Coq8 (Coquelet-8, French teleprinting system), at 1555. (Hall-RSA)
- 19131.0 Atlas-US DEA Flight Following Center, taking ops-normal from Flint 116 at 2030. (Perron-MD)
- 20500.0 CENTR1-Romanian MFA, Bucharest, calling LAS in ALE, at 1200. (Watson-UK)
- 20535.6 Unknown-Possibly Medicin Sans Frontiers (Doctors Without Borders), with encrypted or compressed PACTOR-II, at 1547. (Watson-UK)
- 20550.0 1000-Italian Guardia Di Finanza ["Financial Police" -Hugh], calling 1100 in ALE at 0957, 1007, and 1233. (Watson-UK)
- 20631.0 200179-US Air Force C-17, sounding in ALE at 1318. CRONPR-USAF, Croughton, sounding at 1346. (Watson-UK)
- 21964.0 Miami Radio-Probable LDOC ground station calling aircraft CWC 15, no joy, at 1644. (Perron-MD)
- 22542.0 JJC-Tokyo Radio, with the English FAX newspaper, 60/576, at 1200. (Hall-RSA)
- 23214.0 UCG-US Customs Service, sounding in ALE at 1310. CS5, sounding at 1331, D90 and CS1 at 1338, PR1 at 1342, and R25 at 1351. (Watson-UK)
- 23337.0 291191-US Air Force C-17, sounding in ALE at 1114. (Watson-UK)
- 23387.5 LOR-Argentine Navy, long RTTY weather report, plain and encrypted, at 1050. (Watson-UK)
- 25350.0 CS9-US Customs Service, sounding in ALE at 1141. (Watson-UK)
- 26350.0 PR1-US Customs Service, sounding in ALE at 1632. D90, sounding at 1655. (Watson-UK)
- 26441.7 RFVIE-French Navy, Le Port, circuit "IRE" idling at 1505. (Hall-RSA)
- 26500.0 CRO-Unknown station, sending this CW identifier, then "P0" off-frequency, at 1603. (Watson-UK) [Fishing beacon? -Hugh]

## Scrambled Voices

**T**his month we answer two listeners' conundrums concerning some mysterious, unresolvable, sideband voice signals, pass on some bad news regarding a potential breakthrough for MIL-188-110A decoding, take a quick peek at North Korea's diplomatic operations, and have some news concerning MFA Algiers.

### ❖ Mystery SSB Transmissions

Two readers emailed recently asking a very similar question – here's how one of them, Jack in Florida, told the story. "There seem to be some very strange SSB transmissions around at the moment. I've just spent several hours trying to tune in a number of stations on 5620kHz, but no matter how I tune the receiver and regardless of whether I select lower or upper sideband, I can't seem to resolve the speech. I can make out that there are a number of speakers in conversation, both men and women, and it doesn't sound "English." I can hear ALE mixed in there, too. What's going on? Is there something wrong with my radio?"

To put Jack's mind at ease, the answer to the final part of the question is that your receiver is quite well. As for the mystery signals, it luckily didn't take much work for us to decide what was going on.

We recognized the frequency as a very busy nighttime channel used by the Mexican military. The mystery voice signals are produced by the AVS (Analog Voice Security) add-on to Harris HF radio equipment. AVS has a quite distinctive sound, which at first sounds like an off-tuned SSB signal or one that's on the other sideband. You can try to tune the signal in, but this effect never changes – it still sounds off-tune and as if it was on the other sideband. AVS is, of course, a type of speech scrambler.

### ❖ What Does a Speech Scrambler Do?

AVS is interesting in that it uses a combination of three basic methods of speech scrambling. The first is time domain scrambling, the second is frequency inversion, and the third is band-splitting.

In time domain scrambling, the original voice is split into a certain number of chunks of time, is manipulated, and then sent out over the airwaves. Of course, you might be able to spot the problem with this type of scrambling, which limits its effectiveness. That is, to really scramble

the speech well, one needs to perform many manipulations over a long time period. But doing so will require a considerable delay before the scrambled speech is sent out over the air. This delay is not useful if your conversations are composed of short, snappy "overs," which of course most tactical traffic is. Time domain scrambling can also produce unwanted effects in the secured speech, such as echoes. AVS introduces a delay of about 500ms from when the original speech took place and the scrambled version is decoded. This is acceptable for most uses.

For frequency inversion scrambling, the high and low frequency components of the original speech are inverted. The problem with frequency inversion is that it's relatively trivial to reconstruct the original speech with some basic equipment, and it also does little to obscure the characteristics of the original voice. AVS varies the frequency at which the inversion takes place to improve security.

In a band-splitting scrambler, the original speech is split into several discrete frequency bands, which are then sent over the air at different frequencies. AVS uses 24 separate bands.

With AVS, there are also a number of codes which are used to control various parameters of the basic scrambling methods, thus providing a large degree of customization from installation to installation – over 100 million combinations to be exact.

Understanding the basics of analog speech scrambling probably helps explain why AVS, despite its high-tech trickery, still leaves enough of the original speaker to distinguish male from female voices, and to some extent, different languages, too. To provide even greater security, organizations must turn to digital encryption methods, but we'll leave those for another day!

So how does AVS sound? Take a trip over to Leif Dehio's excellent audio clip website and listen for yourself. While you are there, listening to some of the other scramblers will no doubt help you become more aware of the variety of these systems on the air today. You may never have realized that some of the odd sounds you've been hearing lately are scrambled speech!

### ❖ MIL-188-110A Soundcard Decoder

Almost coincidentally, I was thinking about sending a message to Charles Brain regarding the possibility of a MIL-188-110A 2400bd modem

decoder, when I stumbled across some screen shots of the very same in the December issue of *RadCom*, the house journal of the UK's Radio Society of Great Britain.

A quick email exchange with Charles ensued, but it seems that a "PC-110A" soundcard-based decoder will not be forthcoming.

### ❖ North Korean Diplomatic Service

In the December 2001 issue of this column, we extensively covered the operations of the North Koreans. With this country still very much in the news, it's not unexpected to find an increase in HF activity.

Most evenings from around 10pm (Eastern) one can find the distinctive 50bd RTTY signals with 1000Hz (yes, 1kHz) tone shift around 6870, 6970 and 10870kHz. Make sure that you tune +/-10kHz from these frequencies, as they do tend to move around according to the prevailing conditions and interference.

Most traffic is composed of long messages of five letter groups.

### ❖ MFA Algiers

Most listeners will be familiar with this operation's Coquelet modem. While some embassies continue to use this system to communicate with Algiers, others appear to have transitioned to the Alcatel 801 system which is capable of at least 1200bd throughput. The system also has an 8 tone supervisory and link control mode which sounds like wide-spaced Coquelet – the tones in this case being spaced by 100Hz. You can hear the new modem in operation around 16337kHz +/-2kHz most days from 1500UTC.

The Algerians have also been heard testing Clover-2000 modems recently.

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### Resources

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Harris AVS Audio Clip -  
[http://rover.vistecprivat.de/~signals/WAV/8021\\_VOC.WAV](http://rover.vistecprivat.de/~signals/WAV/8021_VOC.WAV)  
Leif Dehio's Vocoder Clips -  
<http://rover.vistecprivat.de/~signals/TABLES/VOCODER.HTML>  
North Korean Diplo Profile -  
<http://www.chace-ortiz.org/umc/mfatext/Nkorea.txt>



## Where The Buzzes Are

Digital Radio Mondiale (DRM, shortwave digital mode) proposed transmissions effective from Mar 30 with CIRAF target zones (see <http://www.monitoringtimes.com/html/mcira.html> for list of zones):

5975 0815-1500 28 Jülich 40 kW DTK  
6015 0500-0700 27S Flevo 100 kW (commencing Jun 2) Dutch RNW  
7150 1030-1230 27S Flevo 100 kW (Jun 2 to Jul 7) English RNW  
7150 1200-1500 27S Flevo 100 kW (Jul 7 to Jul 27) Dutch RNW  
9760 1100-1300 27,37 Jülich 40 kW DTK  
11870 0600-0700 18,27,28W Bonaire 50 kW Dutch RNW  
15425 0700-0757 18,27,28W Bonaire 50 kW Dutch RNW  
15440 0800-1400 27N,28N Sines 250 kW English DWL  
15525 2130-2300 18,27,28 Bonaire 50 kW English RNW  
15525 2300-2325 18,27,28 Bonaire 50 kW Spanish RNW  
15565 2030-2125 18,27,28 Bonaire 50 kW English RNW  
15715 0900-1400 18,28 Jülich 40 kW DTK (EDXP)

Harry Helms writes: Visiting the DRM site, after spending a lot of time on the Ibiquty site, confirms my feeling that a substantial portion of the broadcast industry – both domestic and international – must've suffered some form of head injury in the past few years. Did something horrible happen a few years ago at NAB that wasn't widely reported?? I mean, they really can't believe that billions of people worldwide are eager for the opportunity to junk their perfectly-functioning analog receivers for expensive new DRM/IBOC models? No one could be that

delusional, could they? For a look at what the future really holds, read "Building Wireless Community Networks" by Rob Flickenger (O'Reilly, ISBN 0-596-00204-1). I think terrestrial broadcasters are in the same position today as DEC, Data General, CDC, Burroughs, etc., were in the late 1970s when the first personal computers were introduced. Those swept away by a revolution are always the last ones to realize what's really going on (via NRC-AM list)

### Latest WRTH Update File Available For Download

From the WRTH website at <http://www.wrth.com/WRTHUPDATES.pdf> [note caps!] (Sean D. Gilbert, Editor: Shortwave Guide; International Broadcasting Editor: WRTH)

### El Dorado for LA DXers

New expanded and improved version with 1248 verie signers, 908 email-addresses and 956 anniversaries, all from radio stations in Latinamerica. Please take a look at <http://members01.chello.se/mwm/eldorado/index.html> (Nils Jakobsson, *hard-core-dx*)

### Signal

My DX site has moved to its own domain: <http://dxsignal.info> [includes English version of Russian DX bulletins] (Dmitry Mezin, Kazan, Russia)

**AFGHANISTAN** At 1756-1832\* on 7000, unLD with music and talks, language sounds like Farsi or Dari. Numerous mentions of Taleban and Afghanistan. Some music sounding "Indian." Carrier and USB (Jari Savolainen, Finland, *DX Listening Digest*) This is Information Radio (Afghanistan), ex-8700 (Dave Kernick, UK, DXLD) [non]. A-03 schedule for R. Afghanistan in Pashto/Dari via Merlin Communications:

0130-0327 13680 DHA 250 kW / 045 deg [UAE]  
1330-1627 18940 KVI 500 kW / 095 deg [Norway]  
(Ivo and Angel! Observer, Bulgaria) In March started at \*1430

**ANGOLA** R. Nacional de Angola broadcasts in foreign languages, one hour each of English, French, Lingala, as well as Portuguese, 2200-0100 daily to Af on 3375, 7245 (WRTH 2003 update) Anyone ever hear them in English? (gh)

**AUSTRIA** At a listeners meeting in Dresden, Wolf Harranth said he feels that the federal government of Austria is closing down ROI because the station always kept a policy of independent reporting. Presumably ROI will still formally exist but only with very little foreign language programming and none of its own German productions (Kai Ludwig, *DX Listening Digest*) Decision day was March 26, and if the answer was "no", Radio Austria International in its present form may go off the air on July 1 (AIB Newsletter)

Whatever ROI's fate, the best German DX program, *Intermedia*, formerly produced by Wolf Harranth, was to be cancelled at the end of March (Michael Weigand, DXLD)

**BIAFRA** [non] V. of Biafra International, clandestine, 12125, Sat until 2000\* Feb 15 announced change next week to 2100 on 7380 (Rich D'Angelo, PA, NASWA Flashsheet) In English to Waf via Armavir, Russia, 200 kW, 335 degrees effective Feb. 22, Sat 2100-2200 on 7380; SINPO 55544 here (Ivo and Angel! Observer, Bulgaria) There used to be a Merlin transmission via South Africa on 7380 at 2100-2200, the new schedule of V. of Biafra International. Seems weak enough here to be from there again, not Russia (Wolfgang Bueschel, Germany, *DX Listening Digest*) Excellent on new 7380 \*2100-2145 fadeout UT Sat only. Interesting to hear an English language clandestine (Sam Dellit, Qsld., ARDXC)

**BOLIVIA** 4877.77v, R. La Cruz del Sur is off the air on weekends. Heard with good signal M-F (Arnaldo Slaen, Salta, Argentina, DSWCI DX Window)

**BRAZIL** R. Nacional da Amazônia, Brasília, back on 6180 (\ 11780) after some time on alternate 9665 (Karel Honzik, Czechia, *hard-core-dx*)

Spanish programming of R. Internacional de China will continue reaching South America via transmitter of Radiobrás, in Brasília. The agreement was recently renewed, according to A Voz do Brasil heard by Oséias Fantinelli, of Jacutinga (RS). This is at 0100 on 9665 with 250 kW. Opinion: instead of broadcasting Brasil to the exterior, our politicians prefer to retransmit the culture of other countries. We could have RNB on the same frequency improving the image of Brasil abroad. What is the reason for this policy? (Célio Romais, Panorama, @atividade DX)

Rádio Difusora Acreana is broadcasting in Spanish, a show called Antônio Fiori, on 4885 at 0100-0200 UT Fri and Sat (Saulo Gomes de Sousa, Porto Velho, Rondônia, *radioescutas*)

R. Globo, Rio de Janeiro, heard around 1400 on a feeder frequency, 13240, in reduced carrier DSB. Programming included interviews, lots of material about Rio (Adán Mur, Villota, Paraguay, *Conexión Digital*)

**BURKINA FASO** African on 4815 at 0615, presumably R. Burkina Faso re-activated on "original" frequency (Piet Pijpers, Netherlands, *DX Listening Digest*) But then back on 5030 at 2135-2203 (Scott R. Barbour, Jr., NH, *World Of Radio*)

**CHINA** You suggested we produce more hours of program. Well, we are working on that and hopefully you'll be able to hear the second hour in two or three months (Li Ping, [Chief Announcer] [Head, English Section, China Radio International], March, via Dan Say, BC, *swprograms* via DXLD) Gotta keep up with Taiwan, which has had a 2-hour English broadcast for a long time. See also BRAZIL (gh)

**COLOMBIA** La Voz de tu Conciencia tried to zero-beat frequency but remained slightly off 6010, causing het with R. Mil, México and others, an unusable mix. If major broadcasters can't be kept off 6010, the little stations ought to press for more drastic measures, like finding clear out-of-band frequencies for themselves. Unfortunately, they are both likely stymied by national administrations who do not understand the reality of SW broadcasting, the need for frequency agility and international representation. Mixing "tropical" and "international" SW broadcasting on the 6 MHz band is no less a problem than mixing hams and broadcasters on 7 MHz (Glenn Hauser, OK, *DX Listening Digest*)

After some days of absence, R. Melodia back with fine signal on 6139.8 (Stig Hartvig Nielsen, Denmark, *hard-core-dx*) Best after adjacent interference on both sides closed at 0600 (gh, OK)

R. Reloj, Tulua. 2879.97, at 1100. I have seldom heard a harmonic with such a strong signal. Newscast "Alerta Valle del Cauca" and IDs, 2 x 1439.98 (Björn Malm, Quito, Ecuador, *SW Bulletin*)

**CONGO** R. Congo, Brazzaville once again active on 4765, very weak in vernaculars around 1730-1800 (Jarmo Patala, Hyvinkää, Finland, *DXing.info*) Another evening, R. Congo was again on 4765 around 1945 with Chinese style music (!?) and test IDs in French with frequency and contact info. Are Chinese techs restoring this, too? (Jarmo Patala, Finland, *dxing.info*)

**CROATIA** [non] More English programming! On a UT Sunday at 0525 Voice of Croatia (via DTK) 7085 English news started earlier than before, ended at 0529, so must have started at 0522, and then a new program, review of the week in the

Croatian newspapers, until 0536. Then Spanish news, also earlier than usual, and press review at 0543-0553. So additional English is at least on UT-Sundays at approximately 0120, 0320, 0520, 0720, and 0920 on usual frequencies (Joe Hanlon in Philadelphia, *DX Listening Digest*) Or one hour earlier for DST

**CUBA** One night in March at 0543, RHC in English on new 11760 \ 9820, ex-6000; perhaps a fluke or test, as subsequently back on 6000 (gh)

All times UTC; All frequencies kHz; \* before hr = sign on, \* after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; A-03=summer season; [non] = Broadcast to or for the listed country, but not necessarily originating there; u.o.s. = unless otherwise stated

**DENMARK** [non] Norway has decided to run the transmitters at 250 kW the rest of the YEAR to save electricity (and money). Our schedule is also available in Danish and English at <http://www.dr.dk/rdk> (Erik Køie, R. Denmark, DX Listening Digest)

**DEUTSCHES REICH** [non] Ernst Zundel, a German citizen, who once broadcast his neo-Nazi "Another Voice of Freedom" on US SW stations, was deported back to Canada in February when his visa expired. He had been living in Tennessee after Canada refused to grant him citizenship (AP, Hans Johnson, Cumbredx) He never took Canadian citizenship and faces charges in his native Germany. In the late 1980s I used to listen to Zundel's program over WRNO, New Orleans. The show was the closest one could experience to the crude WWII Nazi radio propaganda. He was not very well educated in either science or history, and just about any listener with any breadth of reading could find glaring errors to easily refute (Hue Miller, swprograms)

**DOMINICAN REPUBLIC** Onda Musical reactivated on 4780, ID at 1129 (Mark Coady, Ont., ODXA)

**ECUADOR** Demonstrating a certain lack of confidence in new Australian transmitter, HCJB prolonged its direct S. Asian service at 0200-0400 on 12040 at least until late March; but not on A03 sked: (gh) HCJB A03 English:

0000 0300 9745 100 351 ENAm  
0000 0600 21455 1 35/225 Eu/SPac  
0300 0600 9745 100 324 WNAm  
0600 0800 9860 100 42 Eu  
0600 0800 21455 1 35/225 Eu/SPac  
1100 1430 12005 75 43 Carib  
1100 1430 15115 100 352/128 N/SAm  
1100 1430 21455 1 35/225 Eu/SPac  
2000 2200 15185 100 41 Eu

(via Swapan Chakraborty, and Alokesh Gupta, India, DXLD)

**EGYPT** R. Cairo A-03 schedule shows new frequencies for English to NAM, first change in ages: 2300-0030 11725 ex-9900; 0200-0330 11780 ex-9475 (via Alokesh Gupta, India)

**EQUATORIAL GUINEA** Radio Nacional de Guinea Equatorial in Bata, testing on 5005 at 1812-1829, audio clean and sharp. Maybe the Chinese engineers got the new transmitter up and testing now. Nice if this station is activated again (Jari Savolainen, Finland, DX Listening Digest)

**ERITREA** [non] Saturday on 5925 at 15-16 UT, Voice of Democratic Eritrea, from Jülich, 1500 Tigrinya, 1530 Arabic (Erik Køie, Denmark, DX Listening Digest) Mostly shouting, loud hum (Kai Ludwig, Germany, DXLD)

**ETHIOPIA** [non] V. of Ethiopia began Feb 16 Sundays 2000-2100 on 7560, in English, prepared by Democracy Frontiers, towards Europe, North America and Northern Africa (TDP, Belgium) Seems to be an English version of Dejan Radio, but from where (Russia?) (Christian Ghibaudou, Nice, France, DSWCI DX Window) Next week moved to 7520 (Björn Fransson, Sweden, DX Listening Digest) Criticizing Western inaction against the "Stalinist" Ethiopian government. Strong signal on clear channel (Mike Barraclough, UK, DXLD) Samara, Russia, site, 250 kW, 188 degrees (Ivo and Angel! Observer, Bulgaria) Most likely via Kvitsoy, Norway. During propagation disturbance, behaved like other known Norway frequencies with auroral flutter, unlike Russian and Bulgarian sites (Wolfgang Bueschel, BC-DX) I sent an e-mail report on their inaugural broadcast to [info@democracyfrontiers.org](mailto:info@democracyfrontiers.org) After 6 days a short reply came by e-mail from "EC" with e-mail: [Articles@ethiopiancommentator.com](mailto:Articles@ethiopiancommentator.com) So this is a real clandestine, brokered by TDP in Belgium (Anker Petersen, Denmark, hard-core-dx)

From VOE's Democracy Frontiers website <http://www.democracyfrontiers.org/> part of mission statement: The Voice of Ethiopia is a radio service for the world community. It is produced by Ethiopian academicians and professionals, residing in Ethiopia and in the Diaspora. We are priests, pastors, scientists, engineers, doctors, nurses and businessmen and women. Our only prayer and desire is for dictatorship to vanish from the sacred soil of Ethiopia, and in its place we pray and work very hard for Lady Liberty to reign tall in the Christian Island that is Ethiopia! The mission of the radio service is to alert the international community about the current tragedy in Ethiopia from the perspective of Ethiopians... (via gh)

V. of Ethiopian Medhin tested Sun Mar 9 at 1800-1900 on 7520 in Amharic; from The Ethiopian Medhin Democratic Party, towards Europe (Ludo Maes, TDP)

**GERMANY** Deutsche Welle planned to move out of its old asbestos-contaminated building in Cologne at last in early March, to Schuermannbau, what had been parliamentary buildings in Bonn. Existing postal addresses will remain in effect another year. Besides dropping English to North America, German is reduced to evenings only (Silke Broeker, DW, via Rubén Guillermo Margenet, Argentina, Conexión Digital) German program will be produced in the old building at least until August (Kai Ludwig, Germany, Feb 21, DX Listening Digest)

The new DW A-03 program and frequency guide can be downloaded at <http://tinyurl.com/5xqz> This links to a PDF file. It so happens that the Rwanda relay beam toward WAF is 310 degrees, which goes on to cross the Atlantic and enter NAM around Washington DC, then somewhere between Enid and Huntsville. For A-03 in English, this remains in use at 2100-2200 on 15205, 11865 (gh) It's rather early but better than nothing (Ben Loveless, Michigan, DX Listening Digest)

DW has issued two new QSL Cards, one for its 50th anniversary, the other of Sines Relay. The new postage stamp featuring DW's 50th anniversary is expected by May (Swapan Chakraborty, India, DX Listening Digest)

**GUATEMALA** R. Cultural, 3300, 0958-1035, canned ID, religious talks, and music (Scott R Barbour Jr, NH, DX Listening Digest) Has anyone received a QSL "card" from Radio Cultural in the past 5 years? I have yet to receive one in the past 10, or ever (Konnie Rychalsky, CT, Cumbre DX) Mine was the first e-mail report to reach R. Cultural, after reactivating 3300. From [tgna@guate.net](mailto:tgna@guate.net) Wayne Berger replied: We went so long with no reports that we had it off for almost a year to save electricity. It is now on a reduced schedule: 1000-1330, 2300-0330. Check <http://www.radiocultural.com> (via Kraig Krist, KG4LAC, VA, DX Listening Digest) I wonder if you are using less power on 3300 now than before and if so how much? (gh to Berger) Power is same, 10 kW with a horizontal dipole. Plan to drop to 1 kW in the near future. This frequency is not for DX but for coverage within the country (Wayne Berger, TGNA, DXLD)

**IRAN** Altho I had not given my phone number in a reception report to VOIRI, received a phone call from Brad Berry at the station wanting to interview me. They must

have looked it up online. I was quite taken aback, but it is something if any station makes an effort to contact listeners personally; some can't even be bothered to write back, even for IRCs and American Dollars. I have not heard my interview broadcast, but hope I didn't sound too noncommittal! (Richard Lewis, UK, World DX Club Contact)

**IRAQ** [and non] Check out Monitoring Iraq: War of the Airwaves <http://www.dxing.info/articles/iraq.dx> - a guide to monitoring radio stations transmitting to and from Iraq (Mika Mäkeläinen)

[non] Voice of Iraqi People/Voice of the Iraqi Republic, via Jeddah, Sa'udi Arabia, 1822-2305 from late Jan on 9750 ex 9570 to avoid interference, searching for a better reception in Iraq. Clear ID e.g. at 1900 and 1907 before and after news: "Idha'at al-Jumhurayah min Baghdad, Sawt al-Sha'b al-Iraqi". 2305 Message to Iraqi Soldiers to refuse Saddam's orders. Usual half frequency spur on 4785 also has moved to 4875, now only with faint signal in LSB, indicating that the 50 kW transmitter has had an overhaul in connection with its change of frequency (Chaabane, Liangas, Petersen and/or Titarev, DSWCI DX Window)

**ITALY** IRRS-Shortwave A03: 13840 0530-0630 Mon-Fri 20 kW A3 nondirectional English; 13840 0800-1300 Sat & Sun 20 kW A3 non-directional English, German. 5780 (alternate 6290) 1900-2030 Sat & Sun 20 kW A3 non-dir English, German, Italian (from <http://www.nexus.org>)

**KASHMIR** [non] One day on 6135 at 0230-0330 R. Sadayee Kashmir's programs were mixing with those of Urdu Service of AIR. At the same time on 6155, AIR had same type of mix. Another day at 0330 when RSK ended, for a very short time an AIR-type Hindi program was in progress. So it looks like an AIR transmitter after all! Later moved to 6100, also at 1430-1530 (Jose Jacob, VU2JOS/AT0J, Hyderabad, India)

**KURDISTAN** V. of People of Kurdistan had been on 4024.85 but in early March another station appeared near this frequency, "Voice of Liberation of Iraq" in Arabic 'Sout Tahrir al Iraq', heard from 1930 on 4025 with strange messages to the Iraqi soldiers. "Please don't attack the coalition [coalition-ed.] forces which mainly getting here to liberate you all from the dictator Iraqi regime," etc. Said they broadcast twice daily at 0630 and 1830, opening a few minutes earlier at 1825, and also on MW 1206 (Tarek Zeidan, Egypt, BC-DX) First heard by Mika Mäkeläinen in Finland on March 6 signing off at 2031. It uses the transmitters of the Voice of the People of Kurdistan, but its programming is clearly separate. VOPK ends at 1800, followed by a break before the Voice of Iraqi Liberation begins. The transmitters are located in Sulaymaniyah in northern Iraq (DXing.info)

**LAOS** [non] Hmong Lao Radio verified 12070 at 0106-0130, saying they broadcast UT Wed and Fri only 0100-0200. Signed by Shoua Cha, Chair, Report sent to United Laos Movement for Democracy, Shoua Cha, Chairman, Hmong Lao Radio, 302 University Ave. West, St. Paul, MN 55103. Reply came from Hmong Lao Radio/ULMD, P.O. Box 6426, St. Paul, MN 55106 (Wendel Craighead, KS, NASWA Flashsheet)

**LEBANON** [non] Silent since a month of tests in Nov-Dec, the Free Patriotic Movement of Lebanon's "Voice of Liberty" started broadcasts again at 1600-1700 in Arabic on 11515 daily from 25 February 2003: According to their website <http://www.tayyar.org/contenu/PagePrincipale.php>

Brokered by TDP, at <http://www.airtime.be/schedule.html> listed as Sawt Lubnan Al-Houriya (Alan Pennington, BDXC-UK) Tayyar Website has audio on demand; broadcasts are daily; grid in English about shows actually in Arabic, daily u.o.s. - look at those 1630 titles: 1600 Lebanese National Anthem; 1605 News; 1620 Political Analysis; 1630 Mon Zig zag, Tue Lebanon's Heart, Wed Violence of the pacifists, Thu Report of the Security [sic] General, Fri A Man fom [sic] our land, Sat Tomorrow's whining, Sun Sunday Interview 1640 Understand each other [exc Sun, Interview continues] 1655 Quote for tomorrow (from [http://www.tayyar.org/files/radionews/030224\\_grid.htm](http://www.tayyar.org/files/radionews/030224_grid.htm))

**LIBYA** [non] Summer A-03 schedule for LJB Voice of Africa via Issoudun, France, 500 kW:

11635	2000-2130	153 deg
15205	1800-2000	153 deg
15315	1900-2030	140 deg
15610	1100-1230	204 deg
15660	1600-1900	204 deg
17635	1700-1900	140 deg
17695	1100-1230	185/204 deg
17695	1600-1900	185 deg
17880	1700-1800	153 deg
21675	1100-1500	153 deg
21695	1000-1400	140 deg
21810	1100-1230	185 deg
(Ivo and Angel! Observer, Bulgaria)		

**LUXEMBOURG** A rare overnight broadcast of New Zealand on 6095 was blocked after 1550 by disturbing DRM co-channel from here; broadband covering 6088.83 to 6101.20. Even R. Yugoslavia on nearby 6100 was disturbed. This was preliminary to 11 days of scheduled 75/40 kW DRM tests from BCE (Broadcasting Center Europe), Junglinster (Wolfgang Bueschel, DX Listening Digest) Up from 6090 to avoid Bayern 6085? (gh) Confirmed by Markus Weidner as RTL-Radio German with 20.9 kbit/sec. 6095 is already in use by Radio Polonia within the announced time frame (Kai Ludwig, Germany, DXLD) I heard the 6095 DRM racket already at 0910. It went on continuously until 1700. Poland was a complete loss during the midday service to Western Europe. In the late afternoon the DRM signal was strong and disturbing both 6090 and 6100. Only missing the Morse pips the Soviet jammers used to insert at regular intervals for internal IDs (Olle Alm, Sweden, DX Listening Digest)

**MÉXICO** R. Mil Onda Corta has new webpage, showing latest times for its DX program: <http://www.nrm.com.mx/estaciones/radiomil/DX.html> (Héctor García Bojorge, Conexión Digital)

**NEW ZEALAND** RNZI A-03 until 26 Oct [but usually modified in May and Sept, at least]:

1650-1750	6095 Sun-Thu
1750-1850	11980 Sun-Thu, rest daily:
1851-2215	15160
2216-0505	17675
0506-0705	11825
0706-1105	9885



# Shortwave Broadcasting

1106-1305 9885  
1306-1650 6095 occasional overnight  
(via Alokesh Gupta, India)

**NIGERIA** I've noticed the audio/modulation level of VON, 7255 and 15120, fluctuating wildly from one speaker/segment to the next. They REALLY need an Optimod, or a competent board-op to ride the levels. But hey, who cares? It's only a shortwave station, heard all over the world (gh)

**PAKISTAN** R. Pakistan HS on 7571 in Urdu around 2345 (Jose Jacob, dx\_india) New all-night relay for Mideast, 1915-0045 on 7570, continuing in A-03 (Wolfgang Bueschel, Germany, DXLD)

**PERÚ** New on SW, 4964.27, Radio Santa Mónica, departamento de Cusco at 0115-0121, very clear "Radio Santa Mónica" IDs. On MW 1370 is a "Radio Santa Mónica" in Cusco, so added SW? Another night varied to 4964.97, until 0100\* (Björn Malm, Quito, Ecuador, SW Bulletin)

unID on 4890 was relaying evangelical TV audio from Canal 33 in Peru. During a rare moment when they seemed to broadcast something local instead of the usual tiresome programming, mentioned the towns of Huanta and Juliaca, with a Peruvian accent (Samuel Cassio Martins, Brasil, DX Listening Digest) A great deal of the program consists of TV/video-audio. Most of it seems to be about "the destruction of the world, La última década en este mundo" (Björn Malm, Ecuador, SW Bulletin) Finally identified as Radio Macedonia, Arequipa, run by North American group (José Elias, Venezuela, Conexión Digital) 100 watts (Henrik Klemetz, DXLD)

**PHILIPPINES** DUR2 is listed with 250 watts on 9580, the last remaining low powered regional shortwave station in the Philippines (Adrian Michael Peterson, reviewing the 2003 WRTH on AWR Wavescan) Full entry shows: DUR2 Marulas, Valenzuela, 9580v, 0.25 kW, 0000-0930v. Operated by PBS, relays various PBS AM and FM services. G.C.: 14.41N/120.59E (DXLD)

**RUSSIA** Sometime this year, digital transmitters will go into use in Moscow and Irkutsk; DRM tests to Japan were made from the latter last year. Irkutsk-DRM will be used only for relays of foreign stations. VOR has a joint project with the private station Russkoye Radio: VOR will provide news, RR entertainment.

VOR is the first Russian station authorized to transmit from Germany. It will be 18 hours per day in Russian, German and English, via DTK. VOR is now heard in the US via a variety of means besides SW and internet: local cable systems, NEXTEL cell phones, satellite delivery to vehicles (via WRN and Sirius), and also on the Scola satellite (Francisco Rodriguez, programa DX Frecuencia RM, La Voz de Rusia, Conexión Digital)

**SA'UDI ARABIA** [non] In late Jan, clandestine Sawt-Al Islah, Voice of Reform, which had been on 9925, said it would move back to its initial frequency 7590 for better reception, but the move was delayed, as jamming on 9925 continued (A. Chaabane, Tunisia, DSWCI DX Window)

**SEYCHELLES** [and non] Dick Whittington of FEBA Radio reported that their Seychelles SW station would have to cease transmissions at the end of the winter season "due to financial and environmental reasons on the island." However, he said FEBA will continue via the facilities of other stations (Jeff White, HFCC report in NASB Newsletter)

With three transmitters working flat out, it was impossible to squeeze more programs into evening peak listening hours. The bold decision by the FEBA UK Board to transfer all programs from Seychelles to other stations brings new freedom to FEBA. It's like accessing a fleet of taxis rather than running just one car. Using Seychelles was expensive, and the government needed to reclaim land from the coral lagoon around our extensive antenna system. Cheaper transmitting costs release money to make and air more programs. The challenge has been to find the right station for each language and to get the best price for a good quality service (Tony Ford, FEBA, via Juergen Kubiak, DXLD)

Our organization is purchasing the three 100 kW's from Far East on the Seychelles. We are shipping one to Liberia and the other two back to the US. One may end up at an undetermined location (Doc Burkhardt, WJIE, World Prayer Broadcasting Network)

**SOUTH AFRICA** Site dedicated to Springbok Radio, the first commercial radio station in South Africa which went on the air in May 1950 (and used to be on SW) <http://pamamouse.com/springbokradio.html> (via Sheldon Harvey, Greenfield Park, Quebec, Radio HF Internet Newsletter via DXLD)

**SPAIN** [non] RNE heard on 5845.05 is a difference product 11815 minus 5970 from Cariari de Pococi, Costa Rica (Roberto Scaglione, Sicily, DX Listening Digest)

**SWEDEN** [and non] R. Sweden English to NAm, A-03, analog: 1130, 1230 and 1330 on 17840; 0230 and 0330 on 9495 via Sackville, Canada (SCDX MediaScan) R. Sweden will start DRM June 16 via RCI Sackville. RCI will be carrying a number of English programs from various international broadcasters both mornings and evenings local time. Others expected to take part are BBC, Netherlands, Vatican, Japan, and China (Anders Backlin, Radio Sweden, SCDX MediaScan)

Received a package from Teracom for the report sent to them during the R. Sweden tests on 9400: a full data signed full color card showing the control room at Hörby, a schedule; and a medium-sized colorful blowup beach ball with Teracom printed on it (Michael Stevenson, NSW)

**TINIAN** The federal government is pouring \$5.7 million into expanding its Tinian-based IBB station, to reach more countries in Asia Far East and the Pacific. The U.S. Broadcasting Board of Governors awarded the contract to Telesource CNMI Inc. Its president, K. J. Semikian, said the project involves the construction of two shortwave antennas within 360 days. He said there is a possibility that the project may still be expanded. Each shortwave antenna could reach places as far as 200 miles [sic!] from Tinian. Once completed, IBB, which operates VOA and Radio Free Asia, can reach China, Indonesia, Bangladesh, and other countries in Asia and the Pacific. Telesource currently operates the power system on Tinian (Gemma Q. Casas, Marianas Variety News via E. Baxendale) Just antennas?

**TURKEY** V. of Turkey at 2200-2250 in English to NAm on 9830 ex-12000 (Ivo and Angell Observer, Bulgaria)

**UKRAINE** RRT again and again registers frequencies for use by RUI, one 1000 kW transmitter at Krasne, for the present season including 6030 2300-0600 etc. But

for years now NRCU has no money to lease the airtime there. So in the end all such registrations will remain file corpses (as German saying goes), except in the unlikely event that NRCU gets money for the Krasne transmitter (Kai Ludwig, Germany, DX Listening Digest)

**UK** A major incident took place at BBCWS Feb 15, exposing serious security lapses at Bush House. Sources told *The Guardian* that between 40 and 50 intruders entered Bush House early on Saturday morning, easily overcoming security guards. The intruders were allowed to move around freely for up to an hour before being rounded up by security staff and police officers who had been called in. Management have ordered an urgent review of security procedures ((c) Radio Netherlands Media Network)

BBC World Service has announced the appointment of new regional heads for Africa, Eurasia, the Americas and Asia and Pacific region. Lúcio Mesquita from Brazil has been appointed Head of the Americas region. He is responsible for broadcasts in North, South and Central America, Caribbean (BBC World Service Press Office)

BBC sacked two World Service Arabic journalists accused of making "malicious and vexatious" complaints against colleagues. Adli Hawwari, a Palestinian, and Abdul-Hadi Jiad, an Iraqi, have been involved in 17 employment tribunals, 20 appeals, 51 days in court, and numerous other hearings over the past five years. The NUJ said there had been disputes at the Arabic Service for more than 10 years over discriminatory treatment of Arab staff, and over the corporation's coverage of Middle East conflicts. And this led the NUJ to threaten strike just as Gulf War II was starting, but the BBCWS and FiveLive networks went into an all-news mode (*Guardian*)

BFBS verified my report on 5945 with a QSL signed by the Managing Director, David Crwys-Williams. I reported it to BFBS UK, Narco Lane, Gerrards Cross, Buckinghamshire SL9 8TN, UK, and by e-mail to [info@bfbs.com](mailto:info@bfbs.com) Attached schedule for UK troops in the Persian Gulf:

0200-0300 6025 13720  
0300-0400 6135 13720  
0400-0500 9820 13720  
1500-1600 5945 15530  
1600-1700 5945 15530  
1700-1800 5945 12040

He says the transmissions come from St. Petersburg, Tashkent, and Rampisham in the UK (Anker Petersen, Denmark, DSWCI DX Window)

**USA** WJIE had a chance to acquire and ship three used 100 kW transmitters for only \$125,000? That's ten cents on the dollar! (Doc Burkhardt, World Prayer Broadcasting Network WJIE/KVOH) from SEYCHELLES, q.v.

WBOH, Newport, NC, ran another series of equipment tests in early March, on 5920, nothing but loop announcement endlessly repeated, first reported by Kraig Krist, VA (DXLD) Sounded like more power than the exciter they were using last fall. Believe they hired the spy numbers lady, finally (gh)

WWRB: We have made major updates to website <http://www.wwrb.org> Will measure antenna performance by flying around the site with instruments. We are testing Global-4, new transmitter; thinking of 3225 or 3200, something like that (Dave Frantz, WWRB) Obvious strategy in frequency selection, as already implemented on 5 and 12 MHz – get as close to WWCW as possible in order to sidetrack some of their audience (gh)

WBCQ shifted from 9335 to 9330, including Laser Radio program Sunday 2000-2400, to avoid interference with transmitters in Syria (Laser Radio via Mike Terry) Syria? On 9335? Says who? Or is it a ute? (gh) New signal on 9335 from before 2230 in Pashto, interfering with Laser Radio via WBCQ, new frequency for R Liberty? (Zacharias Liangas, Retziki, Greece, DX Listening Digest) On IBB schedule as R. Free Afghanistan, later VOA 0030-0230\*, alternating Pashto and Dari, 334 degrees from Iranawila, Sri Lanka, not Syria! So that explains the sudden move of WBCQ to 9330. Strange that IBB and WBCQ are so eager to avoid conflict on 9335, while insisting on maintaining a clash on 7415 with Botswana. WBCQ suffered co-channel interference, and applied to the FCC for an emergency frequency shift to 9330 (Source? [rec.radio.shortwave](http://rec.radio.shortwave) via Mike Terry)

This doesn't add up, as we have already shown that IBB Sri Lanka is on 9335 (after 2230), quite a coincidence. Hmmm, a conspiracy theory: if WBCQ had complained that IBB was the problem, nothing would have been done. I am not aware of any use of 9335, or 9330 by Syria. Has anyone ever heard Damascus on either at any time? (Glenn Hauser, OK, DX Listening Digest) Besides shifting down to 9330, WBCQ The Planet also switched from USB to LSB plus carrier, better now against QRM (Zacharias Liangas, Greece, DX Listening Digest)

The Southern Poverty Law Center, a civil rights group, says seven of the 21 SW stations in the US broadcast far-right programs – a trend that began about a decade ago and has grown to about 1,100 hours of programming a month. "Hal Turner [on WBCQ] is part of an absolute explosion of radical, right-wing programming on shortwave," said Mark Potok, a spokesman for the law center. <http://makeashorterlink.com/?V2A222293> (via Jilly Dybka, KF4ZEO)

The former VOA site in Bethany OH is being restored as a museum. Visitors will view a restored transmitter and control panels. The Amateur Radio Association has established a radio station in the building where they communicate with other radio operators from around the country and abroad (*Journal-News* via Kim Elliott) That's nice, but Bethany was a BROADCAST facility, not a ham station. Why don't they have an SWL setup for visitors? (gh) Also selling VOA T-shirts with slogan "Tell the Truth, And Let the World Decide"; \$20 each at the Voice of America Building. Call Chrisbell Bednar at 513-759-7305 or <http://www.westchesteroh.org/parksandrec/news.html> (via Kim Elliott, DC)

**ZAMBIA** ZNBC missing from 6265 around 2130 (Chris Hambly, Victoria, DX Listening Digest) ZNBC has moved its Radio 1 to new 5915, replacing 6265. Radio 2 is still on 6165. This upsets the nice pattern of all Zambian SW outlets having frequencies ending in 65 (ZNBC on 6165, 6265; Christian Voice on 4965, 6065, 9865). (Chris Greenway, Kenya, DX Listening Digest) Well, at least 5915 is exactly halfway between 5865 and 5965! (gh)

Until the next, Best of DX and 73 de Glenn!

## 0000 UTC on 15039

COSTA RICA: Radio for Peace Intl. Segment on AIDS research in India, to *World of Radio*. (Fernando Garcia, Baltimore, MD) RFPI 7440, 0050. (Stewart MacKenzie, Huntington Beach, CA)

## 0029 UTC on 13695

THAILAND: Radio Thailand. Station call and identification at sign-on. *News Hour* into *Thai Culture* and national music program. SIO 353. (Kraig Krist-KG4LAC, Annandale, VA)

## 0100 UTC on 7375

UKRAINE: Radio Ukraine Intl. Station identification and feature *Close Up* to newscast, repeat at 0442. (Krist-VA) 7375, 0138-0145+. (Harold Frodge, Midland, MI)

## 0104 UTC on 7345

CZECH REP: Radio Prague Intl. Comedy show for SIO 433. (Banks, TX) 7345, 1414-1425. (Weronka, NC)

## 0110 UTC on 7115

SERBIA & MONTENEGRO: Radio Yugoslavia. Current affairs program on Serbia and the European Union. (David W. Weronka, Benson, NC) 6100, 2216-2229\*. (Frodge, MI)

## 0120 UTC on 7310

CHINA: Xingjing People's BC. Chinese service with news format and interlude music. (McKenzie, CA) **Radio Exterior España's** China relay 9660, 1010. (Heller, TX) **China Radio Intl** 11980, 1319-1325+, // 11900 SIO 333. (Frodge, MI) **CPBS** 11915, 0035; **CPBS** 11835, 0050. (MacKenzie, CA)

## 0142 UTC on 9925

GERMANY: Voice of Croatia. Sports news to station ID into Spanish service at 0145. (Jill Dybka-KF4ZEO, Kingston Springs, TN) **VO Croatia** 7285, 0340-0345. (Weronka, NC)

## 0200 UTC on 9835

HUNGARY: Radio Budapest. Interview with a book seller and discussion on champagne and sparkling wines. (Krist, VA)

## 0200 UTC on 4950

ANGOLA: Radio Nacional. Portuguese newscasts to "Radio Nacional de Angola" identification, followed by lite vocal music program. SIO 333. (Frodge, MI) 4950, 0435-0440. (Duane Hadley, Bristol, TN)

## 0240 UTC on 6155

RUSSIA: Voice of. English service // 7180 with interview on Aussie/Russian relations. (Dybka, TN) **VOR** 12020, 0308 // 7180, 13655, 15445. (MacKenzie, CA) **VOR** 6235, 2151-2159\*; 7300, 2107-2111+ (Frodge, MI) 0450, 7270; 0501, 7240. (Howard Moser, Lincolnshire, IL) **VOR** 7390, 0105 Spanish; // 9965, 7440, 7180, 7125. (MacKenzie, CA)

## 0300 UTC on 4820

Radio Botswana. Rooster crow at top of hour into instrumental version of *Life Goes On*. (Dybka, TN) (R.C. Hewitt, Quartzsite, AZ) 4820, 415-0425+. (T.Banks, Dallas, TX; Krist, VA)

## 0306 UTC on 3240

SWAZILAND: Trans World Radio. Station identification into religious programming. S3 signal quality monitored to 0345\* signal. (Hewitt, AZ) **TWR** 3240, 0318-0330+. (Frodge, MI) **TWR** 9500, 0500-0510. (Thomas Gibson, Spokane, WA)

## 0334 UTC on 15075

INDIA: All India Radio-Bangalore. Hindu service with comments and news format over Indian sitar music. (MacKenzie, CA) **AIR-Mumbai** 4840, 0212-0226. (Scott R. Barbour, Intervale, NH/Cumbre DX) **Radio Kashmir-Srinagar** 4950, 0018-2257. (Don Nelson, OR/CDX) **AIR-Ranchi** (tent.) 4960, 1227 Hindu; **AIR-Itanagar** 4990, 1228-1230; **AIR-Jeypore** 5040, 1231-1300. (George Maroti, NY/NASWA Flash Sheet)

## 0344 UTC on 4790

SAUDI ARABIA: BSKSA. (Tent.) Male announcer's Arabic talks to brief music segments and prayer. Carrier cut briefly at 0355, returning at 0401. Noted \*245-0341 with open carrier to 0255 interval signal. Group choral anthem and Arabic ID, followed by Quran recitations. Signal fair with fading. (Rich D'Angelo, PA/NASWA)

## 0450 UTC on 7200

SUDAN: SNBC/Radio Omdurman. Tentative log with regional news and mention of Omdurman, Sudan in presumed Sudanese. Music bumpers between news segments. (Dybka, TN)

## 0500 UTC on 11710

SOUTH AFRICA: Channel Africa. Station sign-on to news and features; 17870, 1720 with economy and sports roundup. (Moser IL) **Radio Sondergrense** 3320, 2054-2121 in Afrikaans. (Barbour, NH/NASWA) **AWR** 0450-0500\* with religious programming. (Sam Wright, Biloxi, MS)

## 1000 UTC on 6140

URUGUAY: Radio Monte Carlo. Spanish. Abrupt sign-on with Uruguayan folk tunes and mention of La Pla peninsula's bad weather for two days. Station ID at 1020 "Radio Monte Carlo...La Super". (Garcia, MD)

## 1015 UTC on 3329.8

PERU: Radio Ondas del Huallaga. Spanish. Time signal to identification and mention of Huanuco. Peruvian music program to male/female chat. Peru's **Radio Oriente** 6188, 1015. (Frank Hillton, Charleston, SC) **Radio Bolivar** 5460.33, 1106. Latin pops to "canned" ID over music. Rapid fire talk over music to time check. (Dave Valko, PA/CDX) **Radio Victoria** 6020.30, 1005-1020. (Banks, Dallas, TX)

## 1120 UTC on 4905

TIBET: PBS Xizang, Lhasa. Chinese with possible Tibetan songs, // 4920 better reception into newscast at 1130. (Garcia, MD)

## 1143 UTC on 4845

GUATEMALA: Radio K'ekchi. Spanish. Station ID at 1145 over religious organ music. Good to strong signal past 1209. **Radio Buenas Nuevas** 4800, 1215-1300+. Religious programming format to station ID. (Jeffrey S. Heller, Katy, TX/NASWA) **Radio Maya** 3325, 1125. (Jerry Lineback, KS/NASWA) **R. K'ekchi** 4845, 0222-0304\*. (D-Angelo, PA/NASWA)

## 1604 UTC on 15605

FRANCE: Radio France Intl. African news to station ID, into world news. (Krist, VA)

## 1700 UTC on 17880

LIBYA: Radio Jamahiriya. Arabic. Time pips signal to ID and Koran readings. (William McGuire, Cheverly, MD)

## 1800 UTC on 6070

CANADA: CFRX Toronto. News-Talk 1010 CFRB identification. 10-10 Sports update to *Traffic Center* and call-in show, // 1010 AM about same signal quality. (Frodge, MI) **Radio Netherlands** Sackville relay 15220, 1610-1615. (Joe Wood, Gray, TN) **CKZN** St John's Newfoundland 6160, 2208-2215+. (Frodge, MI)

## 1942 UTC on 11990

KUWAIT: Radio Kuwait. International pop chart count down. (Dybka, TN) Techno pop show to newscast on US/Iraq to ID at 2049. Heavy static and poor signal quality. (Wood, TN) 11675, 0110. (Frodge, MI)

## 2002 UTC on 27500

CUBA: Radio Havana. Male/female alternating items on Cuba in Portuguese. Commentary after 2014. Frequency second-harmonic from 13750. (Frodge, MI) **China Radio Intl** Cuban relay 17720, 1430. (Frazer, MA)

## 2003 UTC on 11905

UZBEKISTAN: Radio Tashkent. Tentative log on subcontinental music and mentions of "Tashkent." Heavy static and deep fades. Abrupt sign-off at 2059. (Wood, TN)

## 2038 UTC on 9960

ARMENIA: Voice of Armenia. Klezmer music followed by interval signal and "Voice of Armenia" ID/freqs at 2039. Regional and national news with very good signal quality. (Wood, TN) Audible 2040 on 9960 with anthem and news. (McGuire, MD)

## 2055 UTC on 11775

ANGUILLA: Caribbean Beacon. Dr Gene Scott with his "beg a thon" in progress. University Network ID to classic rock music from Crendence. (Banks, TX)

## 2132 UTC on 9990

EGYPT: Radio Cairo. Middle East news coverage to ID and political commentary. SIO 443. (Frodge, MI)

## 2137 UTC on 21740

AUSTRALIA: Radio Australia. Male/female announcer's comments on the national economy. (MacKenzie, CA)

## 2210 UTC on 9575

MOROCCO: Radio Medi Un. Fair signal with fading. Arabic/French service with US and Arabic pops. Signal improved by 2300 with "Medi" identification. (Banks, TX)

Thanks to our contributors – Have you sent in YOUR logs?

Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gaylevanhorn@monitoringtimes.com) **Please note:** paper strips and cassette recordings will no longer be accepted. English broadcast unless otherwise noted.



### Russian Reception Report Forms

With this month's feature focus on Russia and the break-away republics, here's an added bonus on QSLing. Did you log a station that prefers Russian reception reports? Increase your chances for a reply by referring to: <http://www.eibi.de.vu/>. You'll find a Russian reception report form with "fill-in-the blank" reporting, plus instructions available in Word or PDF format. A printable prepared QSL card is available which you can enclose with your letter. A station's preferred policy of Russian should not hinder you now.

Multilingual dictionaries always make an excellent addition to your QSLing library. Check out your local book store for common languages to assist in translating your cards or letters. Lan-

guage translation websites will guide you in software including dictionaries, foreign language for travelers (great for an international DXpedition!), and electronic translators at: <http://www.travlang.com>. *AltaVista's Babel Fish Translation Service*, remains a staple for free online translation for blocks of text at: <http://www.world.altavista.com/>. In fact, by using a <http://www.google.com> search query, you'll find an extensive listing for language translating options.

Taiwan's Radio Taipei International is issuing two new attractive cards. Both cards focus on *Dong Shan Riverside Park* and *Xi Men Ding*, a popular area for shoppers. Germany's Deutsche Welle 50<sup>th</sup> Anniversary card is available, and makes a colorful commemorative for this occasion. Good luck in your translating and QSLing!

#### ALBANIA

Radio Tirana, 6115 kHz. Partial data card signed by the station Correspondence Section. Received in 16 months for an English report and one US dollar. Station address: External Service, Rruga Ismail Qemal, NR 11, Tirana, Albania. My first QSL from R. Tirana in almost ten years of listening! (Joe Wood, Gray, TN)

#### AMATEUR RADIO

ESTONIA-ES5RW, 10 meters SSB. Full data color QSL card. Received in ten months via ARRL bureau. (Jill Dybka, Kingston Springs, TN)

GREECE-SV1ENS, 10 meter PSK31. Full data black & white card. Received in eight months via ARRL bureau. (Larry Van Horn, N5FPW, NC)

MAURITIUS-3B8/F5AEG (AF-049) 10 meters SSB. Full data QSL. Received in 83 days for a Euro nested airmail envelope plus one US dollar. QSL address: Laurent Ebener, 2, Rue Des Merles, F-67114 Eschau, France. (Van Horn, NC)

#### ARMENIA

Voice of Armenia, 9960 kHz. Partial data form letter unsigned, plus calendar, and schedule. Received in 74 days for an English report. Station address: Radio Agency, Alek Manukyan Str. 5, 375025 Yerevan, Armenia. (Wood, TN)

#### CANADA

Radio Canada Intl, 9590 kHz. Full data "antenna farm" QSL card signed by Bill Westenhaven, plus stickers and pennants. Station address: English Service, P.O. Box 6000, Montreal, Quebec Canada H3C 3AB Canada. Irv McWherter-K3IRV, Kensington, MD; Joe Squashic, Wake Forest, NC)

#### CLANDESTINE

Voice of Iranian Kurdistan, PDKI Canada Bureau. Email verification in 72 days via [pdkicanada@pdki.org](mailto:pdkicanada@pdki.org). Station address: P.O. Box 29010, London, Ontario N6G 2V3 Canada. (Arnaldo Slaen, Buenos Aires, Argentina)

#### GERMANY

Mitteldeutscher Rundfunk, 6085 kHz. Full data logo card with illegible signature, plus stickers and large MDR Anniversary book. Received in 54 days for an English report and two IRCs (returned). Station address: Kantstrasse 71-73, 04275 Leipzig, Germany. (Bill Wilkins, Springfield, MO)

Deutschland Radio, 6005 kHz. Partial data card unsigned. Received in 73 days for an English report. Station address: Hans-Rosenthal Platz, D 10825, Berlin, Schouberg, Germany. (Wood, TN)

#### MEDIUM WAVE

KOMA, 1520 kHz AM. No data verification form letter unsigned, plus station stickers. Received in 7 days for an AM report and SASE (used for reply). Station address: Renda Broadcasting Corp., P.O. Box 14818, Oklahoma City, OK 73113-0818. (Mark Redfox, Albuquerque, NM)

KJCK, 1420 kHz. Partial data letter signed by Gary McIntyre. Received in ten days for an AM report and one US dollar. Station address: P.O. Box 789, Junction City, KS 66441. (Patrick Griffith, Westminster, CO)

KKSU, 580 kHz AM. Full data letter on Kansas Univ. letterhead, signed by Larry Jackson, plus bumper sticker. Received in 55 days for an AM report, one US dollar and address label (used). Station address: Dept. Of Communications, Kansas St. University, 20 McCain Auditorium, Manhattan, KS 66505-4701. This station is no longer on the air. (Wilkins, MO)

KLFF 890 kHz AM, Arroyo Grande, CA. Quick email response in a few hours from Jon Fugler-Gen. Manager. Email: [jon.fugler@klife.org](mailto:jon.fugler@klife.org). Mentioned no time for snail mail, so consider email to this station. (Patrick Martin, Seaside, OR)

KSAL, 1150 kHz AM. Partial data hand written letter on station letterhead, signed by Jerry Hinnihus-VP/Gen. Manager. Station "goodie" pack enclosed of stickers, coverage maps, and metal license plate. Received in 14 days for an English AM re-

port and one US dollar (returned). Station address: 131 North Sante Fe, Salinas, KS 67402. (Griffith, CO)

KZPA, 900 kHz AM. Beautiful Alaska map QSL card signed by Roberta Thomas-Station Manager, plus personal letter and flyer on Fort Yukon. Received in 150 days for an AM report. Station address: Gwandak Public Broadcasting Inc., P.O. Box 50, Fort Yukon, AK 99740. (Martin, OR)

WBAP, 820 kHz AM. Full data station logo card unsigned. Received in 27 days for an AM report and one U.S. dollar. Station address: 2221 E. Lamar Blvd., Suite 300, Arlington, TX 76006. (Redfox, NM)

#### PIRATE

Undercover Radio, 6925 kHz USB. Full data QSL and info sheet plus a 2003 *An Adventure in Space and Time* CD. Received in eight days for an email report to: [undercoverradio.com](mailto:undercoverradio.com). QSL maildrop; P.O. Box 293, Merlin, Ontario, Canada N0P 1W0. (Kraig Krist-KG4LAC, Annandale, VA)

#### ROMANIA

Radio Romania, 17790 kHz. Full data card unsigned, plus sticker. Envelope contain four colorful Romanian commemorative stamps. Received in 65 days for an email report to: [egl@rri.ro](mailto:egl@rri.ro). Website: <http://www.rri.ro>. (Krist, VA)

#### SWITZERLAND

Swiss Radio International, 13660 kHz. Full data unsigned card, plus schedule. Received in 52 days for an English report. Station address: CH-3000, Berne 15, Switzerland. (Squashic, NC)

#### UKRAINE

Radio Ukraine International, 9810 kHz. Full data unsigned card of St. Volodymyr Cathedral, without transmitter notation. Received for an English report. Station address: Kreshchatik str. 26, 252001 Kyiv, Ukraine. (Stephen Zolvinski, Columbus, OH) Full data unsigned card received in 42 days for an email report to; [vsru@nrcu.gov.ua](mailto:vsru@nrcu.gov.ua) (Krist, VA)

## DX, SWL, Media & IT Programs

It's time for our semi-annual review of programs on our favorite topic. Capsule descriptions are provided as each program has a different focus. For most stations refer to the *Shortwave Guide* pages for frequency information. (Some listings have frequency information to clarify which of the station's multiple services is carrying the program.) The one letter day abbreviations track those used in *MT's Shortwave Guide* section. Times are approximate and both times and frequencies are subject to change.

**Ask WWCR** - focuses on listener questions and station operations. (Updated fortnightly.)

On **WWCR** - **F** 0845 (9475), 1930 (15825); **A** 0215 (5070), 0745 (5070); **S** 0915 (15825); **M** 0345 (5070). (Also available on-demand <http://www.wwcr.com>)

**The Buzz** - Richard Aedy reports about the biggest changes facing our already technologically sophisticated world.

On **R. Australia** - **H** 2330, **A** 0430. (Also on-demand <http://www.abc.net.au/rn/science/buzz>.)

**CIDX Report** - Sheldon Harvey reviews recent developments in international broadcasting.

On **R. Canada Int.** - **S** 2007; **M** 0107, 0207; **T** 2035; **W** 0135, 0235 (fortnightly within *The Mailbag* program). (Also available on-demand <http://www.rcinet.ca>.)

**Continent of Media** - Glenn Hauser's periodic review of domestic broadcasting activities.

On **R. for Peace Int.** - **F** 1900; **A** 0100, 0700, 1300, 1730, 2330; **S** 0530, 1130; **T** 2000; **W** 0200, 0800, 1400. (Note: Although heard weekly, program is updated about every six weeks.) (Also available on-demand <http://www.worldofradio.com>.)

**CounterSpin** - Fairness and Accuracy In Reporting (FAIR) looks behind the headlines and examines how the news media reports the key stories of the week.

On **R. for Peace Int.** - **A** 1600, 2200, **S** 0400, 1000, **T** 1830, **W** 0030, 0630, 1230.

**DX Corner\*** - How the SWLing and DXing hobby looks from central Europe.

On **R. Budapest** - **A** 1920, 2120; **S** 0120, 0250. (Also available on-demand <http://www.wrn.org/listeners/stations/station.php?StationID=9>.)

**DX Corner\*** - A friendly program from the Voice of Turkey for radio enthusiasts.

On **Voice of Turkey**, fortnightly - **A** 1245, 1845, 2045, 2215; **S** 0315.

[\*Not the same program, although they share the same title.]

**DXers' Corner** - All India Radio's entry in this genre featuring reports from Indian hobbyists.

On **All India Radio**, fortnightly - **M** 1840, 2130; **T** 2340

**DX Mailbag** - Essentially a letters program.

On **R. Romania Intl.** - **A** 1345, 2345; **S** 0245, 0445.

**DX Partyline** - Allen Graham hosts and produces this program designed for new and seasoned DXers and SWLers, providing a place for the clubs to impart information about their events and projects and reading reports from listeners around the world about what is being heard on the bands in their respective regions.

On **HCB Ecuador** - **A** 0700, 0930, 1430, 2000; **S** 0000, 0300. (Also available on-demand <http://www.hcjb.org/english>.)

**DXers Special** - Presumably a program supported by Latin American hobbyists with information from a station that is heard only sporadically in North America, unfortunately.

On **RAE Argentina** - **W** 1945; **H** 0345.

**DXers Unlimited** - Arnie Coro emphasizes amateur radio and technical topics in a friendly, accessible program.

On **R. Habana Cuba** (in two weekly editions) -

First edition - **A** 2110, 2310; **S** 0140, 0340, 0540.

Second edition - **T** 2110, 2310; **W** 0140, 0340, 0540.

(Scripts available <http://www.radiohc.cu/homeing.htm>.)

**DXing with Cumbre** - Marie Lamb hosts a relaxed program that, whenever possible, likes to emphasize new DX catches.

On **WHRI Indiana** - **A** 0500 (5745 & 7315), 0730 (5745 & 7315), 1200 (9840), 1230 (15105), 1500 (13760), 1800 (13760), 1930 (9495), 2230 (9495); **S** 0630 (5745), 2100 (5745); **M** 0230 (5745), 0330 (7315).

On **KWHR Hawaii** - **A** 0600 (17780), 1000 (11565); **S** 1600 (9930), **M** 0300 (17510).

On **WHRA Maine** - **F** 2100 (17650); **A** 0430 (7580), 2130 (17650), **S** 0230 (7580), 0730 (7580).

(Available on demand <http://au.groups.yahoo.com/group/dxerscallingAudiosend/>.)

**Feedback** - Roger Broadbent produces and hosts a program that answers listener letters, provides updates on developments at Radio Australia and examines timely topics in international broadcasting and communications.

On **R. Australia** - **F** 2105; **A** 0605; **S** 0305. (Selected scripts and on-demand audio available <http://www.abc.net.au/ra>.)

**Go Digital** - Tracey Logan looks at developments in digital technology.

On **BBCWS Americas stream** - **T** 1506, **W** 0106. (There is also a live webcast each **M** 1500 at

<http://www.bbc.news.com>, click on "technology".)

**Ham Radio Today** - John Beck and Graham Bulmer host a weekly segment for the amateur radio hobbyist.

On **HCB Ecuador** - **A** 0800, 1030, 1600, 2100; **S** 0100, 0400. (Also available on-demand <http://www.hcjb.org/english>.)

**Mailbox** - Myra Oh reads letters and news of interest, Paul Ormandy reports on the latest South Pacific dx news and RNZI frequency manager Adrian Sainsbury answers and explains technical questions and issues.

On **R. New Zealand Intl.** (airs fortnightly alternating with **RNZI Talk**, which features info about RNZI) - **M** 0805, 2135; **W** 1735; **H** 0305; **F** 1930. (Available on-demand <http://www.rnzi.com>.)

**Media Report** - From Radio National (ABC-Australia), a unique program looking at the motivations behind the mass media and those who seek to influence it, both in Australia and abroad.

On **R. Australia** - **H** 0130, 1030, 1530, 2330. (Available on-demand <http://www.abc.net.au/rn>.)

**Mediawatch** - From National Radio (NZ), a weekly look at how print, radio, television and the Internet deliver the news at home and abroad.

On **R. New Zealand Int.** - **S** 1012. Also on-demand <http://www.mediawatch.co.nz>.

**Radio Bulgaria Calling** - Like RRI's program, primarily a letters and reception report program.

On **R. Bulgaria** - **F** 1745, 2145, 2345; **A** 0245, 0645, 1145. (Also available on-demand, but only on the day of broadcast <http://www.nationalradio.bg/real.htm>.)

**Radio Waves** - In essence, a short observation on some aspect of the radio hobby.

On **R. Exterior de Espana** - **A** 2140; **S** 0040.

**Radio World** - Frans Vossen with timely information and commentary on the international radio scene.

On **R. Vlaanderen Intl.** - **S** 0700, 1130, 1730, 1930, 2230; **M** 0300. (Also available on-demand [http://www.rvi.be/rvi\\_master/uk/radio\\_world/index.html](http://www.rvi.be/rvi_master/uk/radio_world/index.html).)

**Spectrum** - A rather unfocused discussion and call-in program ostensibly on radio topics.

On **WWCR Tennessee** - **S** 0400 (5070).

**The Real Amateur Radio Show** - Interactive discussion about amateur radio topics.

On **WBCQ Maine** - **A** 2300 (7415).

continued on page 84





## HOW TO USE THE SHORTWAVE GUIDE

0000-0100 twhfa    USA, Voice of America    5995am    6130ca    7405am    9455af  
 ① ② ⑤ ③ ④    ⑥ ⑦

### Convert your time to UTC.

Broadcast time on ① and time off ② are expressed in Coordinated Universal Time (UTC) – the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Daylight Time) 4, 5, 6 or 7 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC *Sunday* will be heard on *Saturday* evening in America (in other words, 8:30 pm Eastern, 7:30 pm Central, etc.).

### Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by UTC time on ①, then alphabetically by country ③, followed by the station name ④. (If the station name is the same as the country, we don't repeat it, e.g., "Vanuatu, Radio" [Vanuatu].)

If a broadcast is not *daily*, the days of broadcast ⑤ will appear in the column following the time of broadcast, using the following codes:

#### Day Codes

s/S	Sunday
m/M	Monday
t/T	Tuesday
w/W	Wednesday
h/H	Thursday
f/F	Friday
a/A	Saturday
D	Daily
mon/MON	monthly

In the same column ⑤, irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

### Choose the most promising frequencies for the time, location and conditions.

The frequencies ⑥ follow to the right of the station listing; all frequencies are listed in kilohertz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions. But they can also change in response to short-

term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports from her monitoring team and MT readers to make the Shortwave Guide up-to-date as of one week before print deadline.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the target area ⑦ of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

#### Target Areas

af:	Africa
al:	alternate frequency (occasional use only)
am:	The Americas
as:	Asia
au:	Australia
ca:	Central America
do:	domestic broadcast
eu:	Europe
irr:	irregular (Costa Rica RFPI)
me:	Middle East
na:	North America
om:	omnidirectional
pa:	Pacific
sa:	South America
va:	various

### Choose a program or station you want to hear.

Selected programs for prime listening hours appear following the frequencies – space does not permit 24 hour listings nor can every station be listed. However, listings for the most popular stations and selected lesser-known stations illustrate the variety available on shortwave. The format of the listings alternates among three different styles – by station, by genre and by day – month by month. Times listed are approximate and programs are subject to change.

The program listings emphasize broadcasts targeted to North America. In most cases, the stations and programs listed should be readily receivable in North America using a portable radio. Most broadcasters produce one broadcast in English per day that is repeated over a 24 hour period to all areas. If you are able to listen to transmissions to other areas of the world during "non-prime time" hours, referring to the prime time listings for those stations will likely be helpful in determining what programs will be broadcast.

Occasionally, a program or station listing may be followed by a reference to another listing for the same program or station at a different time. This is done to conserve space and make it possible to provide more listings.

#### MT MONITORING TEAM

Gayle Van Horn    John Figliozi  
 Frequency Manager    Program Manager  
 gaylevanhorn@monitoringtimes.com    johnfigliozi@monitoringtimes.com

Mark Fine, VA  
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#### Program Highlights

#### John Figliozi

#### WAR COVERAGE

It's a sad irony that shortwave is regarded as having its greatest utility during times of crisis. So it has been during the Iraq war, which at the time these words were written was entering its second week.

I say "sad" because, in truth, a shortwave radio is always useful. If the perspectives and insight available through it were valued more during times of relative peace, perhaps a few conflicts might be deterred. But you already know that, so why am I telling you?

Deutsche Welle has done well synthesizing divergent European views. **Radio Netherlands**, as usual, has brought unique angles to its reporting. **RCI** and **Radio Australia** have lent badly needed sobriety and balance. Some have been surprisingly good: **VOA** and **China Radio International** to name two. Some disappointingly bad – **Voice of Russia** at times sounds as if it has reverted to the bad old days of Radio Moscow. Stations close in have added immediacy and intensity.

One week into the conflict, the **BBC World Service** remains in full news regalia, which seems more of a conceit at times than a service. While it may play well to what the BBC now sees as its main strength and source of identity, it practically eviscerates what used to be seen as its chief virtue – its sense of proportion.

Having said that, when not burdened by the constant repetition, the BBC's coverage has been excellent with its unequalled base of journalists in the field and in the studio providing, by far, the most comprehensive coverage.

A unique approach during the first hours, which could stand emulation, was demonstrated by **DW** just days before its already chronicled retrenchment. Early on, it ran reports as they came in, but went to classical music during the intervals rather than have someone just yak incessantly. That was refreshing.



## 0000 UTC - 8PM E / 7PM C / 5PM P

0000	0015	Cambodia, National Radio Of	11940as	
0000	0015	Japan, Radio	6145na	17810as
0000	0030	Egypt, Radio Cairo	11725na	
0000	0030	mtwhf/vl Solomon Islands, SIBC	5020do	9545do
0000	0030	Sri Lanka, SLBC	4940as	
0000	0030	Thailand, Radio	9570af	
0000	0030	UK, BBC World Service	17615as	3915as 11945as
0000	0045	India, All India Radio	9705as	9950as 11620as
0000	0055	Spain, R Exterior Espana	13605as	6055am
0000	0057	Canada, Radio Canada Intl	9755as	11895as
0000	0059	Canada, Radio Canada Intl	5960na	9590na
0000	0100	Anguilla, Caribbean Beacon	6090am	
0000	0100	Australia, ABC NT Alice Springs	4810eu	9960eu
0000	0100	Australia, ABC NT Katherine	5025do	
0000	0100	Australia, ABC NT Tennant Crk	4910do	
0000	0100	Australia, Radio	5995va	9580va
0000	0100		9660pa 11650va 11660as	12080va 15240pa
0000	0100		15415as 17775as 17580pa	17795va 21725va
0000	0100	Canada, CBC Northern Service	9625do	
0000	0100	Canada, CFRX Toronto ON	6070do	
0000	0100	Canada, CFVP Calgary AB	6030do	
0000	0100	Canada, CKZN St John's NF	6160do	
0000	0100	Canada, CKZU Vancouver BC	6160do	
0000	0100	Costa Rica, R for Peace Intl	7445am	
0000	0100	Costa Rica, University Network	5030am	6150am
0000	0100		7375am 9725sa 11870am	
0000	0100	Ecuador, HCJB	9745na	21455usb
0000	0100	Germany, Deutsche Welle	9825as	7130as 9505as
0000	0100	Guyana, Voice of	3290do	5950do
0000	0100	Malaysia, Radio	7295do	
0000	0100	Namibia, NBC	3270af	3290af
0000	0100	Netherlands, Radio	6165na	9845na
0000	0100	New Zealand, Radio NZ Intl	17675pa	
0000	0100	Russia, University Network	9890as	
0000	0100	Singapore, SBC Radio One	6150do	
0000	0100	UAE, AWR 9720as	9810as	
0000	0100	vl UK, BBC World Service	5970as	5975am
0000	0100		6195as 9410as 9740as	9825sa 11835am
0000	0100		11955as 12095sa 15280as	15310as 15360as
0000	0100		17790as	
0000	0100	USA, Armed Forces Network	3903usb	4278usb
0000	0100		4319usb 4993usb 6350usb	6458usb 10320usb
0000	0100		12579usb	12689usb 13362usb
0000	0100	USA, KALJ Dallas TX	5755va	
0000	0100	USA, KTNB Salt Lk City UT	7505na	
0000	0100	USA, KWHR Naalehu HI	17510as	
0000	0100	USA, Voice of America	5995am	6130am
0000	0100	USA, Voice of America	9455am 9775am 11695am	13790am 13790am
0000	0100	USA, Voice of America	7215va	9770va 11760va
0000	0100		15185va 15290va 17740va	17820va
0000	0100	USA, WBCQ Kennebunk, ME	7415na	9330na
0000	0100		11660na	
0000	0100	USA, WEWN Birmingham AL	5825na	
0000	0100	USA, WHRA Greenbush ME	7580va	
0000	0100	USA, WHRI Noblesville IN	5745va	7315am
0000	0100	USA, WINB Red Lion PA	12160am	
0000	0100	USA, WJIE Louisville KY	7490am	13595am
0000	0100	USA, WRMI Miami FL	9955am	
0000	0100	USA, WRMI Miami FL	7385na	
0000	0100	USA, WRNO New Orleans LA	7355am	
0000	0100	USA, WSHB Cypress Creek SC	9430am	
0000	0100	USA, WSHB Cypress Creek SC	9430am	15285am
0000	0100	USA, WTJC Newport NC	9370na	
0000	0100	USA, WWBS Macon GA	11900na	
0000	0100	USA, WWCR Nashville TN	3210na	5070na
0000	0100		7435na 13845na	
0000	0100	USA, WWRB Manchester TN	6890na	5050na 5085na
0000	0100	USA, WYFR Okeechobee FL	11720na	6085na 9505na
0000	0100	Vanuatu, Radio	3945af	7260do
0000	0100	Zambia, Christian Voice	4965do	
0000	0130	UAE, Gospel For Asia	6145as	
0030	0100	Australia, Radio	17750as	
0030	0100	Iran, VOIRI6015am	6120am	9580am
0030	0100	Lithuania, R Vilnius	7325na	
0030	0100	Russia, Bible Voice BC	12035as	
0030	0100	Russia, Bible Voice BC	12035as	
0030	0100	Solomon Islands, SIBC	5020do	9545do
0030	0100	Sri Lanka, SLBC	4940as	6005as 6075as
0030	0100		9770as 15745as	
0030	0100	Thailand, Radio	15395na	
0030	0100	UAE, Bible Voice	7180as	
0030	0100	UK, BBC World Service	9580as	17615as
0045	0100	Pakistan, Radio	11655as	15455as
0055	0100	Italy, RAI Intl	9675am	

## 0100 UTC - 9PM E / 8PM C / 6PM P

0100	0115	Italy, RAI Intl	9675na	
0100	0115	Pakistan, Radio	11655as	15455as
0100	0125	Netherlands, Radio	6165na	9845na
0100	0127	Czech Rep, Radio Prague Intl	6200na	7345na
0100	0127	Iran, VOIRI6015na	6120na	9580am
0100	0127	Vietnam, Voice of	6175na	
0100	0128	Hungary, Radio Budapest	17775as	9590na
0100	0130	Australia, Radio	17775as	
0100	0130	s Germany, Universal Life	9435as	
0100	0130	as Russia, Bible Voice BC	12035as	
0100	0130	mtwhfa Serbia Montenegro, R Yugoslavia	7115eu	5930am 7230am
0100	0130		9440am	
0100	0130	UAE, Gospel For Asia	6145as	
0100	0130	twhfa USA, Voice of America	5995am	6130am 7115va
0100	0130		7405am 9455am 9635va	9775am 11705va
0100	0130		11725va 11820va 13650va	13790va 17740va
0100	0130		17820va	
0100	0130	Uzbekistan, Radio Tashkent	7135as 7215as	5955as 5975as
0100	0156	China, China Radio Intl	7140as 7580am 9345as	9580na 9790na
0100	0156	North Korea, Voice of	3560as	6195as 6520am
0100	0200	Anguilla, Caribbean Beacon	6090am	11735am
0100	0200	Australia, ABC NT Katherine	5025do	6090am
0100	0200	Australia, ABC NT Tennant Crk	4910do	5025do
0100	0200	Australia, Radio	5995va	9475as
0100	0200		9660pa 11650va 11660pa	9580va 12080va 15240pa
0100	0200		15415as 17750as 17580pa	17795va 21725va
0100	0200	Australia, Voice International	9835as	17775as
0100	0200	vi Austria, AWR	9835as	
0100	0200	Canada, CBC Northern Service	9625do	
0100	0200	Canada, CFRX Toronto ON	6070do	
0100	0200	Canada, CFVP Calgary AB	6030do	
0100	0200	Canada, CKZN St John's NF	6160do	
0100	0200	Canada, CKZU Vancouver BC	6160do	
0100	0200	Costa Rica, R for Peace Intl	7445am	
0100	0200	Costa Rica, University Network	5030am	6150am
0100	0200		7375am 9725sa 11870am	
0100	0200	Cuba, Radio Havana	6090na	13750na
0100	0200	Ecuador, HCJB	9745na	9820na 11705usb
0100	0200	Guyana, Voice of	3290do	21455usb
0100	0200	Indonesia, Voice of	9525va	5950do
0100	0200	Japan, Radio	11860as	
0100	0200		17685 oc 17810as	11880af 15325as
0100	0200	Kyrgyz, Kyrgyz Radio	17835sa	17845na
0100	0200	Namibia, NBC	3270af	4010as 4795as
0100	0200	New Zealand, Radio NZ Intl	17675pa	
0100	0200	Russia, University Network	9890as	
0100	0200	Singapore, SBC Radio One	6150do	
0100	0200	vi Solomon Islands, SIBC	5020do	9545do
0100	0200		Sri Lanka, SLBC	4940as 6005as 6075as
0100	0200		9770as 15745as	
0100	0200	UK, BBC World Service	5975am	6195as
0100	0200		9410as 9525sa 9825sa	11835am 11955as
0100	0200		12095sa 15280as 15310as	15360as 17790as
0100	0200	Ukraine, R Ukraine Intl	9620eu	12040na
0100	0200	USA, Armed Forces Network	3903usb	4278usb
0100	0200		4319usb 4993usb 6350usb	6458usb 10320usb
0100	0200		12579usb	12689usb 13362usb
0100	0200	USA, KALJ Dallas TX	5755va	
0100	0200	USA, KTNB Salt Lk City UT	7505na	
0100	0200	USA, KWHR Naalehu HI	17510as	
0100	0200	USA, WBCQ Kennebunk, ME	7415na	9330na
0100	0200		11660na	
0100	0200	USA, WEWN Birmingham AL	5825na	
0100	0200	USA, WHRA Greenbush ME	7580va	
0100	0200	USA, WHRI Noblesville IN	5745va	7315am
0100	0200	USA, WINB Red Lion PA	12160am	
0100	0200	USA, WJIE Louisville KY	7490am	13595am
0100	0200	USA, WRMI Miami FL	9955am	
0100	0200	USA, WRMI Miami FL	7385na	
0100	0200	USA, WRNO New Orleans LA	7355am	
0100	0200	USA, WSHB Cypress Creek SC	9430na	
0100	0200	USA, WTJC Newport NC	9370na	
0100	0200	USA, WWBS Macon GA	11900na	
0100	0200	USA, WWCR Nashville TN	3210na	5070na
0100	0200		5935na 7465na	
0100	0200	USA, WWRB Manchester TN	6890na	5050na 5085na
0100	0200	USA, WYFR Okeechobee FL	15060as	6065na 9505na
0100	0200	Zambia, Christian Voice	4965do	
0110	0200	as Australia, Radio	9660va	12080pa 17580pa
0120	0129	Croatia, Voice of	9925na	
0130	0200	Iran, VOIRI6120na	9580na	
0130	0200	Sweden, Radio	9435va	

SELECTED PROGRAMMING BEGINS ON PAGE 55



# Shortwave Guide



0130	0200	UK, RTE Radio	6155na		
0130	0200	twfha USA, Voice of America	5995af	6130af	7405va
			9455am 9775va	13740va	
0140	0200	Vatican City, Vatican Radio		7335as	9865as

## 0200 UTC - 10PM E / 9PM C / 7PM P

0200	0210	Bangladesh, Bangla Betar	4882as		
0200	0227	Czech Rep, Radio Prague Intl	6200na	7345na	
0200	0227	Iran, VOIRI 6120na	9580na		
0200	0230	vi Belarus, Radio Belarus Intl	5970eu	7210eu	
0200	0230	Serbia Montenegro, R Yugoslavia	7130eu		
0200	0230	as/vl Solomon Islands, SIBC 5020do	9545do		
0200	0230	UAE, Bible Voice	9610as		
0200	0230	a UK, Wales Radio Intl	9795na		
0200	0256	North Korea, Voice of	4405as	9325as	11335as
		11845as			
0200	0256	Romania, R Romania Intl		9550na	9625as
		11740as 11830na	15370au		
0200	0257	Canada, Radio Canada Intl	15150as	17860as	
0200	0259	Canada, Radio Canada Intl	6040am	9755am	
		11725am			
0200	0300	Anguilla, Caribbean Beacon	6090am		
0200	0300	twfha Argentina, RAE	11710am		
0200	0300	Australia, ABC NT Alice Springs	4810eu	9960eu	
0200	0300	Australia, ABC NT Katherine	5025do		
0200	0300	Australia, ABC NT Tennant Crk	4910do		
0200	0300	Australia, Radio	5995va	9475as	9580va
		9660pa 11650va	12080va	15240pa	15415as
		15515as 17580pa	17750as	21725va	
0200	0300	as Australia, Radio	9660va	12080pa	17580pa
		21725as			
0200	0300	Bulgaria, Radio	9400na	11900na	
0200	0300	Canada, CBC Northern Service	9625do		
0200	0300	Canada, CFRX Toronto ON	6070do		
0200	0300	Canada, CFVP Calgary AB	6030do		
0200	0300	Canada, CKZN St John's NF	6160do		
0200	0300	Canada, CKZU Vancouver BC	6160do		
0200	0300	Costa Rica, R for Peace Intl	7445am		
0200	0300	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa	11870am		
0200	0300	Cuba, Radio Havana	6090na		
0200	0300	Ecuador, HCJB	9745na	21455usb	
0200	0300	Egypt, Radio Cairo	11780na		
0200	0300	Guyana, Voice of	3290do	5950do	
0200	0300	Malaysia, Radio	7295do		
0200	0300	Myanmar, Radio	7185do		
0200	0300	Namibia, NBC	3270af		
0200	0300	New Zealand, Radio NZ Intl	17675pa		
0200	0300	as Philippines, Radio Pilipinas	11885me	15120me	
		15270me			
0200	0300	Russia, University Network	9890as		
0200	0300	Russia, Voice of Russia	6155na	9765na	
		12020na 15445na	17660na		
0200	0300	Singapore, SBC Radio One	6150do		
0200	0300	mtwhf/vl Solomon Islands, SIBC 5020do	9545do		
0200	0300	South Korea, R Korea Intl	9560va	11810va	
		15575va			
0200	0300	Sri Lanka, SLBC	6005as	6075as	6130do
		9770as 15745as			
0200	0300	Taiwan, R Taipei Intl	5950na	9680na	11740na
		15320as 15345as			
0200	0300	UK, BBC World Service	5975am	6195eu	
		9410eu 9750af	9825am	11835am	11760me
		11955as 12095sa	15280as	15310as	15360as
		17790as			
0200	0300	Ukraine, R Ukraine Intl	9620eu	12040na	
0200	0300	USA, Armed Forces Network	4319usb 4993usb	6350usb	4278usb
		12579usb	12689usb	13362usb	
0200	0300	USA, KAIJ Dallas TX	5755va		
0200	0300	USA, KJES Vado NM	7555na		
0200	0300	USA, KTNB Salt Lk City UT		7505na	
0200	0300	USA, KWHR Naalehu HI		17510as	
0200	0300	USA, Voice of America	7115va	9635va	11705va
		11725va 11820va	13650va	17740va	17820va
0200	0300	USA, WBCQ Kennebunk, ME		7415na	9330na
		11660na			
0200	0300	USA, WEWN Birmingham AL	5825na		
0200	0300	USA, WHRA Greenbush ME	7580va		
0200	0300	USA, WHRI Noblesville IN	5745va	7315am	
0200	0300	USA, WINB Red Lion PA	9320am		
0200	0300	USA, WJIE Louisville KY	7490am	13595am	
0200	0300	sm USA, WRMI Miami FL	9955am		
0200	0300	twfha USA, WRMI Miami FL	7385na		
0200	0300	USA, WRNO New Orleans LA	7355am		
0200	0300	s USA, WSHB Cypress Creek SC	9430na		
0200	0300	h USA, WSHB Cypress Creek SC	7535am		
0200	0300	USA, WTJC Newport NC	9370na		
0200	0300	USA, WWCR Nashville TN	3210na	5070na	
		5935na 7465na			
0200	0300	USA, WWRB Manchester TN		5050na	5085na
		6890na			

0200	0300	USA, WYFR Okeechobee FL	6065na	9505na	
0200	0300	Zambia, Christian Voice	4965do		
0200	1215	Cambodia, National Radio Of	11940as		
0215	0220	Nepal, Radio	3230as	5005as	6100as
		7164as			
0230	0257	Vietnam, Voice of	6175na		
0230	0258	Hungary, Radio Budapest		9590na	
0230	0300	Iraq, Radio Iraq Intl	11787irr		
0230	0300	Sweden, Radio	9495na		
0245	0300	twfha Albania, Radio Tirana Intl		6115na	7160eu
0245	0300	UK, BBC World Service		9610af	
0250	0300	Vatican City, Vatican Radio		7305am	9605am

## 0300 UTC - 11PM E / 10PM C / 8PM P

0300	0310	Vatican City, Vatican Radio	7305am	9605am	
		9660af			
0300	0330	Australia, Radio	9580va		
0300	0330	Egypt, Radio Cairo	11780na		
0300	0330	as Philippines, Radio Pilipinas		11885me	15120me
		15270me			
0300	0330	South Africa, Channel Africa		9525af	
0300	0330	Thailand, Radio	15395na		
0300	0330	USA, KJES Vado NM	7555na		
0300	0356	China, China Radio Intl		9560na	
0300	0356	North Korea, Voice of	3560as	6195as	7140as
		9345as			
0300	0400	Anguilla, Caribbean Beacon		6090am	
0300	0400	Australia, ABC NT Alice Springs		4810eu	9960eu
0300	0400	Australia, ABC NT Katherine		5025do	
0300	0400	Australia, ABC NT Tennant Crk		4910do	
0300	0400	Australia, Radio	5995va	9500pa	9660pa
		9815pa 11650va	12080va	15240pa	15415as
		15515va 17580pa	17750as	21725va	
0300	0400	as Australia, Radio	9660va	12080pa	17580pa
		21725as			
0300	0400	vi Botswana, Radio	3356do	4820do	7255do
0300	0400	Canada, CBC Northern Service		9625do	
0300	0400	Canada, CFRX Toronto ON		6070do	
0300	0400	Canada, CFVP Calgary AB		6030do	
0300	0400	Canada, CKZN St John's NF		6160do	
0300	0400	Canada, CKZU Vancouver BC		6160do	
0300	0400	Costa Rica, R for Peace Intl		7445am	
0300	0400	Costa Rica, University Network		5030am	6150am
		7375am 9725sa	11870am	13750na	17645as
0300	0400	Cuba, Radio Havana	6090na	9820na	11705usb
0300	0400	Ecuador, HCJB	9745na		
0300	0400	Guatemala, Radio Cultural		5955do	
0300	0400	vi Guyana, Voice of	3290do	5950do	
0300	0400	Japan, Radio	17825ca	21610	oc
0300	0400	Malaysia, Radio	7295do		
0300	0400	Namibia, NBC	3270af	3290af	
0300	0400	New Zealand, Radio NZ Intl		17675pa	
0300	0400	Oman, Radio	15355af		
0300	0400	Russia, University Network		9890as	
0300	0400	Russia, Voice of Russia	6155na	7180na	12020na
		15445na 17660na	21515na		
0300	0400	Singapore, SBC Radio One		6150do	
0300	0400	mtwhf/vl Solomon Islands, SIBC 5020do		9545do	
0300	0400	Sri Lanka, SLBC	6005as	6075as	6130do
		9770as 15745as			
0300	0400	Taiwan, R Taipei Intl	5950na	9680na	11875as
		15320as			
0300	0400	Turkey, Voice of	7270va	9650eu	11655va
0300	0400	vi UAE, AWR 15160as			
0300	0400	Uganda, Radio	4976do	5026do	7196do
0300	0400	UK, BBC World Service		3255af	5975am
		6005af 6190af	6195eu	7120af	7160af
		9410eu 9750af	9825am	11760as	11835am
		12035af 12095eu	15280as	15310as	15360as
		15575me 17760as	17790as	21660as	21830as
0300	0400	USA, Armed Forces Network	4319usb 4993usb	6350usb	4278usb
		12579usb	12689usb	13362usb	10320usb
0300	0400	USA, KAIJ Dallas TX	5755va		
0300	0400	USA, KTNB Salt Lk City UT		7505na	
0300	0400	USA, KWHR Naalehu HI		17510as	
0300	0400	USA, Voice of America	6080af	7105af	7290af
		7340af 9575af	9885af	11820af	12080af
		17895af			
0300	0400	USA, WBCQ Kennebunk, ME		7415na	9330na
		11660na			
0300	0400	USA, WEWN Birmingham AL		5825na	
0300	0400	USA, WHRA Greenbush ME		7580va	
0300	0400	USA, WHRI Noblesville IN		5745va	7315am
0300	0400	USA, WINB Red Lion PA		9320am	
0300	0400	USA, WJIE Louisville KY		7490am	13595am
0300	0400	USA, WRMI Miami FL	7385na		
0300	0400	USA, WRNO New Orleans LA		7395am	
0300	0400	USA, WTJC Newport NC		9370na	
0300	0400	USA, WWCR Nashville TN		3210na	5070na
		5935na 7465na			
0300	0400	USA, WWRB Manchester TN		5050na	5085na

# Shortwave Guide



0300	0400	6890na USA, WYFR Okeechobee FL 9505na 11855na	5985na	6065na
0300	0400	Zambia, Christian Voice	6065do	
0310	0330	Vatican City, Vatican Radio	9660af	
0320	0329	Croatia, Voice of	7285na	
0330	0350	UAE, Emirates Radio	12005na	
0330	0357	Vietnam, Voice of	6175na	
0330	0400	Albania, Radio Tirana Intl	6115na	7160eu
0330	0400	Malaysia, RTM Kota Kinabalu	5979do	
0330	0400	Nigeria, Radio/Kaduna	4770do	
0330	0400	Nigeria, Radio/Lagos	3326do	
0330	0400	Sweden, Radio	9495na	
0330	0400	UK, BBC World Service	15420af	
0345	0400	Tajikistan, Radio	7245as	

## 0400 UTC - 12AM E / 11PM C / 9PM P

0400	0415	Israel, Kol Israel	9435va	15640va	17600va
0400	0425	Belgium, Radio Vlaanderen Intl	11985na		
0400	0427	Czech Rep, Radio Prague Intl	7345na	7385na	
		9435na			
0400	0430	France Radio France Intl	11910af	11995af	
0400	0430	Guatemala, Radio Cultural	5955do		
0400	0430	Mexico, Radio Mexico Intl	9705am	11770am	
0400	0430	South Africa, AWR	9650af		
0400	0430	South Africa, Channel Africa	5955af		
0400	0430	Sri Lanka, SLBC	6005as	6075as	6130do
		9770as 15745as			
0400	0445	USA, WYFR Okeechobee FL	6065na	9505na	
		9985eu 11530eu			
0400	0456	China, China Radio Intl	9730na		
0400	0456	Romania, R Romania Intl	9550na	11830na	
		15335as 17735as			
0400	0500	Anguilla, Caribbean Beacon	6090am		
0400	0500	Australia, ABC NT Alice Springs	4810eu	9960eu	
0400	0500	Australia, ABC NT Katherine	5025do		
0400	0500	Australia, ABC NT Tennant Crk	4910do		
0400	0500	Australia, Radio	5995va	6080pa	7240pa
		9500as 9660pa 9815pa	11650va	12080va	
		15240pa 15415as 15515va	17580pa	21725va	
0400	0500	as Australia, Radio	9660va	12080pa	17580pa
		21725as			
0400	0500	vi Botswana, Radio	3356do	4820do	7255do
0400	0500	Canada, CBC Northern Service	9625do		
0400	0500	Canada, CFRX Toronto ON	6070do		
0400	0500	Canada, CKZN St John's NF	6160do		
0400	0500	Canada, CKZU Vancouver BC	6160do		
0400	0500	Costa Rica, R for Peace Intl	7455am		
0400	0500	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa 11870am	13750na	17645as	
0400	0500	Cuba, Radio Havana	6090na	9820na	11705usb
0400	0500	Ecuador, HCJB	9745na	21455usb	
0400	0500	Germany, Deutsche Welle	7225af	11945af	
		15410af			
0400	0500	Guyana, Voice of	3290do	5950do	
0400	0500	Malaysia, Radio	7295do		
0400	0500	Malaysia, RTM Kota Kinabalu	5979do		
0400	0500	Namibia, NBC	3270af	3290af	
0400	0500	New Zealand, Radio NZ Intl	17675pa	6090do	
0400	0500	Nigeria, Radio/Kaduna	4770do		
0400	0500	Nigeria, Radio/Lagos	3326do		
0400	0500	Russia, University Network	17765as		
0400	0500	Russia, Voice of Russia	7125na	7180na	12020na
		15445na 15595na 17595na	17660na		
0400	0500	mtwhfa Russia, Voice of Russia	12010na		
0400	0500	Singapore, SBC Radio One	6150do		
0400	0500	mtwhf/vl Solomon Islands, SIBC	5020do	9545do	
0400	0500	Uganda, Radio	4976do	5026do	7196do
0400	0500	UK, BBC World Service	3255af	5975va	7120af
		6005af 6190af 6195eu	7120af	7160af	
		9410eu 11835am 11760as	12095eu	15280as	
		15310as 15360as 15420af	15575me	17640af	
		17760as 17790as 21660as	21830as		
		Ukraine, R Ukraine Intl	7285as	7410eu	
0400	0500	USA, Armed Forces Network	3903usb	4278usb	
0400	0500	4319usb 4993usb 6350usb	6458usb	10320usb	
		12579usb	13362usb		
0400	0500	USA, KAIJ Dallas TX	5755va		
0400	0500	USA, KTNB Salt Lk City UT	7505na		
0400	0500	USA, KWHR Naalehu HI	17780as		
0400	0500	USA, Voice of America	4960af	6080af	7290af
		9530va 9575af 9885af	11835af	11965va	
		12080af 15205va 17895af			
0400	0500	USA, WBCQ Kennebunk, ME	7415na	9330na	
		11660na			
0400	0500	USA, WEWN Birmingham AL	5825na		
0400	0500	USA, WHRA Greenbush ME	7580va		
0400	0500	USA, WHRI Noblesville IN	5745va	7315am	
0400	0500	USA, WJIE Louisville KY	7490am	13595am	
0400	0500	USA, WMLK Bethel PA	9465eu	9955eu	
0400	0500	USA, WRMI Miami FL	7385na		
0400	0500	USA, WRNO New Orleans LA	7395am		

0400	0500	tha USA, WSHB Cypress Creek SC	12020af	
0400	0500	USA, WTJC Newport NC	9370na	
0400	0500	USA, WWCR Nashville TN	3210na	5070na
		5935na 7465na		
0400	0500	USA, WWRB Manchester TN	5950na	5085na
		6890na		
0400	0500	Zambia, Christian Voice	6065do	
0404	0500	USA, WYFR Okeechobee FL	9715na	
0427	0500	Madagascar, Radio VO Hope	12060af	15320af
0430	0445	UK, BBC World Service	6010eu	9815eu
0430	0457	Czech Rep. Radio Prague Intl	9865va	11600va
0430	0500	Australia, Radio	17750as	
0430	0500	Netherlands, Radio	6165na	9590na
0430	0500	Nigeria, Radio/Enugu	6025do	
0430	0500	Nigeria, Radio/Ibadan	6050do	
0430	0500	South Africa, AWR	12080af	
0430	0500	Sri Lanka, SLBC	6130do	
0430	0500	Swaziland, TWR	4775af	6120af
0435	0500	Italy, RAI Intl	6110af	7235af
				9875af

## 0500 UTC - 1AM E / 12AM C / 10PM P

0500	0505	New Zealand, Radio NZ Intl	17675pa	
0500	0530	Australia, Radio	9500as	
0500	0530	mtwhf France Radio France Intl	13610af	15155af
0500	0530	s twhfa Mexico, Radio Mexico Intl	9705am	11770am
0500	0530	Netherlands, Radio	6165na	9590na
0500	0530	South Africa, AWR	6015af	
0500	0530	South Africa, Channel Africa	11710af	
0500	0530	UK, BBC World Service	15280as	
0500	0530	Vatican City, Vatican Radio	9660af	11625af
		15570af		
0500	0556	China, China Radio Intl	9560na	
0500	0600	Anguilla, Caribbean Beacon	6090am	
0500	0600	Australia, ABC NT Alice Springs	4810eu	9960eu
0500	0600	Australia, ABC NT Katherine	5025do	
0500	0600	Australia, ABC NT Tennant Crk	4910do	
0500	0600	Australia, Radio	5995va	6080pa
		9660pa 9815pa 11880va	12080va	15240pa
		15415as 15515va 17580pa	21725va	
0500	0600	as Australia, Radio	9660va	12080pa
		21725as		
0500	0600	mtwhf Bhutan, BC Service	5030al	6035do
0500	0600	vi Botswana, Radio	3356do	4820do
0500	0600	Canada, CBC Northern Service	9625do	
0500	0600	Canada, CFRX Toronto ON	6070do	
0500	0600	Canada, CKZN St John's NF	6160do	
0500	0600	Canada, CKZU Vancouver BC	6160do	
0500	0600	Costa Rica, R for Peace Intl	7455am	
0500	0600	Costa Rica, University Network	5030am	6150am
		7375am 9725sa 11870am	13750na	17645as
0500	0600	Cuba, Radio Havana	6195am	9550na
		9830na		
0500	0600	Ecuador, HCJB	9745na	21455usb
0500	0600	Germany, Deutsche Welle	9700af	11925af
		12045af 13755af 15410af		
0500	0600	Guyana, Voice of	3290do	5950do
0500	0600	Japan, Radio	5975eu	6110na
		9835eu 15195as 13630na	15195as	17810as
		21755 oc		
0500	0600	Kuwait, Radio	15110as	
0500	0600	Malaysia, Radio	7295do	
0500	0600	Malaysia, RTM Kota Kinabalu	5979do	
0500	0600	Namibia, NBC	6060af	6175af
0500	0600	Nigeria, Radio/Enugu	6025do	
0500	0600	Nigeria, Radio/Ibadan	6050do	
0500	0600	Nigeria, Radio/Kaduna	4770do	6090do
		9570do		
0500	0600	Nigeria, Radio/Lagos	3326do	4990af
0500	0600	Nigeria, Voice of	9690af	15120af
0500	0600	Russia, University Network	17765as	
0500	0600	mtwhf Russia, Voice of Russia	12010na	
0500	0600	Russia, Voice of Russia	7180na	12020na
		15445na 15595na 17660na		
0500	0600	Singapore, SBC Radio One	6150do	
0500	0600	vi Solomon Islands, SIBC	5020do	9545do
0500	0600	Swaziland, TWR	6120af	7205af
0500	0600	Uganda, Radio	4976do	5026do
0500	0600	UK, BBC World Service	3255af	5975va
		6195eu 7120af 7160af	6190af	6005af
		11765af 11940af 11955as	9410eu	11760me
		15420af 15565eu 15575as	15310as	15360as
		17790as 17885af 21660as	17640af	17760as
0500	0600	USA, Armed Forces Network	3903usb	4278usb
		4319usb 4993usb 6350usb	6458usb	10320usb
		12579usb	13362usb	
0500	0600	USA, KAIJ Dallas TX	5755va	
0500	0600	USA, KTNB Salt Lk City UT	7505na	
0500	0600	USA, KWHR Naalehu HI	17780as	
0500	0600	USA, Voice of America	6035af	6080af
		9530va 11835af 11965va	12080af	15205va
0500	0600	mtwhf USA, Voice of America	7195af	
0500	0600	USA, WBCQ Kennebunk, ME	7415na	



# Shortwave Guide



0500	0600	twfha	USA, WBCQ Kennebunk, ME	9330na	
0500	0600		USA, WEWN Birmingham AL	5825na	
0500	0600		USA, WHRA Greenbush ME	7580va	
0500	0600		USA, WHRI Noblesville IN	5745va	7315am
0500	0600		USA, WJIE Louisville KY	7490am	13595am
0500	0600		USA, WMLK Bethel PA 9465eu	9955eu	
0500	0600		USA, WRMI Miami FL 7385na		
0500	0600		USA, WRNO New Orleans LA	7395am	
0500	0600	twhf	USA, WSHB Cypress Creek SC	12020af	
0500	0600		USA, WTJC Newport NC	9370na	
0500	0600		USA, WWCR Nashville TN	3210na	5070na
			5935na 7560na		
0500	0600		USA, WWRB Manchester TN	5950na	5085na
			6890na		
0500	0600		USA, WYFR Okeechobee FL	5810na	
0500	0600		Zambia, Christian Voice	6065do	
0506	0600		New Zealand, Radio NZ Intl	11825pa	
0520	0529		Croatia, Voice of	7285na	
0525	0600	vi	Ghana, Ghana BC Corp	3366do	4915do
0530	0545	as	UK, BBC World Service	9875eu	
0530	0550		UAE, Emirates Radio	15435au	21695au
0530	0600		Australia, Radio	17750as	
0530	0600		Italy, IRRS 13840va		
0530	0600		South Africa, AWR	15345af	
0530	0600		Thailand, Radio	21795eu	

## 0600 UTC - 2AM E / 1AM C / 11PM P

0600	0615		South Africa, TWR	11640af	
0600	0620		Vatican City, Vatican Radio	7250eu	4005af 5890eu
0600	0630	mtwhf	France Radio France Intl	11710af	15155af
0600	0630		Italy, IRRS 13840va		
0600	0630	mtwhf	South Africa, Channel Africa	15215af	
0600	0630		USA, Voice of America 7195af	7290af	
0600	0700		Anguilla, Caribbean Beacon	6090am	
0600	0700		Australia, ABC NT Alice Springs	4810eu	9960eu
0600	0700		Australia, ABC NT Katherine	5025do	
0600	0700		Australia, ABC NT Tennant Crk	4910do	
0600	0700		Australia, Radio	7240va	9660pa 9815pa
			11880va 12080va 13620as	15320as	15240pa
			15415as 15515va	17580pa	21725va
0600	0700	as	Australia, Radio	9660va	12080pa 17580pa
			21725as		
0600	0700		Canada, CFRX Toronto ON	6070do	
0600	0700		Canada, CFVP Calgary AB	6030do	
0600	0700		Canada, CKZN St John's NF	6160do	
0600	0700		Canada, CKZU Vancouver BC	6160do	
0600	0700		Costa Rica, R for Peace Intl	7455am	
0600	0700		Costa Rica, University Network	5030am	6150am
			7375am 9725sa	11870am	17645as
0600	0700		Cuba, Radio Havana	6195am	9820na 9830usb
0600	0700		Ecuador, HCJB	9860eu	
0600	0700		Germany, Deutsche Welle	6140eu	9780af
			15275af 17860af		
0600	0700	vi	Ghana, Ghana BC Corp	3366do	4915do
0600	0700		Greece, Voice of	9420eu	15630eu
0600	0700		Guyana, Voice of	3290do	5950do
0600	0700		Japan, Radio	7230eu	9835na 11715va
			11760va 11740as	15195as	17870pa 21755oc
0600	0700		Kuwait, Radio	15110as	
0600	0700		Liberia, ELWA	4760do	
0600	0700		Liberia, R Liberia Intl	6100do	
0600	0700		Malaysia, Radio	7295do	
0600	0700		Malaysia, Voice of	6175as	9750as 15295as
0600	0700		Namibia, NBC	3270af	3290af
0600	0700		New Zealand, Radio NZ Intl	11825pa	
0600	0700		Nigeria, Radio/Enugu	6025do	
0600	0700		Nigeria, Radio/Ibadan	6050do	
0600	0700		Nigeria, Radio/Kaduna	4770do	6090do
			9570do		
0600	0700		Nigeria, Radio/Lagos	3326do	4990af
0600	0700		Nigeria, Voice of	9690af	15120af
0600	0700		Russia, University Network	17765as	
0600	0700		Russia, Voice of Russia	15275au	17665au 21790au
0600	0700		Singapore, SBC Radio One	6150do	
0600	0700	vi	Solomon Islands, SIBC	5020do	9545do
0600	0700		Swaziland, TWR	6120af	9500af
0600	0700		Uganda, Radio	4976do	5026do 7196do
0600	0700		UK, BBC World Service	6055af	6190af
			7120af 7160af	9410eu	11765af 11940af
			11955as 12095eu	15310as	15360as 15485eu
			15565eu 15575as	17640af	17760as 17790as
			21660as		
0600	0700as		UK, BBC World Service	17885af	
0600	0700		USA, Armed Forces Network	3903usb	4278usb
			4319usb 4993usb	6350usb	10320usb
			12579usb	12689usb	13362usb
0600	0700		USA, KAIJ Dallas TX	5755va	
0600	0700		USA, KTNB Salt Lk City UT	7505na	
0600	0700		USA, KWHR Naalehu HI	17780as	
0600	0700		USA, Voice of America	6035af	9530va
			9760va 11835af	11965va	11995af 12080af

			15205va		
0600	0700		USA, WBCQ Kennebunk, ME	7415na	
0600	0700		USA, WEWN Birmingham AL	5825na	9385eu
0600	0700		USA, WHRA Greenbush ME	7580va	
0600	0700		USA, WHRI Noblesville IN	5745va	7315am
0600	0700		USA, WJIE Louisville KY	7490am	13595am
0600	0700		USA, WMLK Bethel PA 9465eu	9955eu	
0600	0700		USA, WRMI Miami FL 7385na		
0600	0700		USA, WRNO New Orleans LA	7395am	
0600	0700	wfa	USA, WSHB Cypress Creek SC	7535af	
0600	0700		USA, WTJC Newport NC	9370na	
0600	0700		USA, WWCR Nashville TN	3210na	5070na
			5935na 7560na		
0600	0700		USA, WYFR Okeechobee FL	7355eu	11530eu
0600	0700	vi	Vanuatu, Radio	3945al	4960do
0600	0700		Yemen, Rep of Yemen Radio	9780me	
0600	0700		Zambia, Christian Voice	9865do	
0603	0654		Romania, R Romania Intl	7105na	9510na
			9570na 11790na	11940na	
0630	0700		Bulgaria, Radio	11600eu	13600eu
0630	0700		Georgia, Georgian Radio	11805eu	
0630	0700		UK, BBC World Service	15400af	
0630	0700		Vatican City, Vatican Radio	11625af	13765af
			15570af		
0637	0700		Romania, R Romania Intl	7105eu	9510eu
			9530eu 9570eu	11790eu	11829na 11940eu
0645	0700	as	Germany, TWR	6045eu	
0645	0700	as	Monaco, TWR	9870eu	
0655	0700	mtwhf	Germany, TWR	6045eu	
0655	0700		Monaco, TWR	9870eu	

## 0700 UTC - 3AM E / 2AM C / 12AM P

0700	0705		New Zealand, Radio NZ Intl	11825pa	
0700	0730		Slovakia, R Slovakia Intl	13715au	15460au
			17550au		
0700	0745		USA, WYFR Okeechobee FL	7355eu	
0700	0750	a	Germany, TWR	6045eu	
0700	0750	as	Monaco, TWR	9870eu	
0700	0756		Romania, R Romania Intl	71720af	21480af
0700	0800		Anguilla, Caribbean Beacon	6090am	
0700	0800		Australia, ABC NT Alice Springs	4810eu	9960eu
0700	0800		Australia, ABC NT Katherine	5025do	
0700	0800		Australia, ABC NT Tennant Crk	4910do	
0700	0800		Australia, Radio	7240va	9660pa 11880va
			13620as 15320as	15320as	15420va 15415as
			17580pa 17715va	17750as	21725va 21740va
0700	0800		Canada, CFRX Toronto ON	6070do	
0700	0800		Canada, CFVP Calgary AB	6030do	
0700	0800		Canada, CKZN St John's NF	6160do	
0700	0800		Canada, CKZU Vancouver BC	6160do	
0700	0800		Costa Rica, R for Peace Intl	7455am	
0700	0800		Costa Rica, University Network	5030am	6150am
			7375am 9725sa	11870am	13750na 17645as
0700	0800		Ecuador, HCJB	9860eu	21455usb
0700	0800	mtwhf	Eqt Guinea, Radio Africa	15185af	
0700	0800	as/vl	Eqt. Guinea, Radio East Africa	15185af	
0700	0800	mtwhf	France Radio France Intl	15605af	
0700	0800		Germany, Deutsche Welle	6140eu	
0700	0800	s	Germany, TWR	6045eu	
0700	0800	vi	Ghana, Ghana BC Corp	3366do	4915do
0700	0800		Guyana, Voice of	3290do	5950do
0700	0800		Kuwait, Radio	15110as	
0700	0800		Liberia, ELWA	4760do	
0700	0800		Liberia, R Liberia Intl	6100do	
0700	0800		Malaysia, Radio	7295do	
0700	0800		Malaysia, RTM Kota Kinabalu	5979do	
0700	0800		Malaysia, Voice of	6175as	9750as 15295as
0700	0800		Monaco, TWR	9870eu	
0700	0800		Myanmar, Radio	9730do	
0700	0800		Papua New Guinea, NBC	4890do	9675al
0700	0800		Russia, University Network	17765as	
0700	0800		Russia, Voice of Russia	11820eu	12010eu 15275au
			17665au 21790au	21515au	
0700	0800		Singapore, SBC Radio One	6150do	
0700	0800	vi	Solomon Islands, SIBC	5020do	9545do
0700	0800		Taiwan, R Taipei Intl	5950na	
0700	0800	as	UK, BBC World Service	17885af	
0700	0800		UK, BBC World Service	6190af	7120af
			11760me 11765af	11940af	11955as 12095eu
			15310as 15360as	15400af	15485eu 15565eu
			15575eu 17640eu	17760as	17790as 21660as
0700	0800		USA, Armed Forces Network	3903usb	4278usb
			4319usb 4993usb	6350usb	6458usb 10320usb
			12579usb	12689usb	13362usb
0700	0800		USA, KAIJ Dallas TX	5755va	
0700	0800		USA, KTNB Salt Lk City UT	7505na	
0700	0800		USA, KWHR Naalehu HI	11565pa	17780as
0700	0800		USA, WBCQ Kennebunk, ME	7415na	
0700	0800		USA, WEWN Birmingham AL	5825na	9385eu
0700	0800		USA, WHRA Greenbush ME	7580va	
0700	0800		USA, WHRI Noblesville IN	5745va	7315am
0700	0800		USA, WJIE Louisville KY	7490am	13595am

# Shortwave Guide



0700	0800	USA, WMLK Bethel PA 9465eu	9955eu	
0700	0800	USA, WRNO New Orleans LA	7395am	
0700	0800	USA, WSHB Cypress Creek SC	7535af	
0700	0800	USA, WTJC Newport NC	9370na	
0700	0800	USA, WWCN Nashville TN	3210na	5070na
		5935na 7560na		
0700	0800	USA, WYFR Okeechobee FL	9985af	11580af
0700	0800	Vanuatu, Radio	3945al	4960do
0706	0800	New Zealand, Radio NZ Intl	9885pa	
0720	0729	Croatia, Voice of	9420pa	
0725	0800	Guam, TWR/KTWR	15205as	
0730	0745	Vatican City, Vatican Radio	6185eu 7250eu	9645af 11740eu 15595as
0730	0800	Australia, Radio	11695as	
0730	0800	Austria, AWR	17820va	
0730	0800	Guam, TWR/KTWR	15205as	
0730	0800	Italy, IRRS 13840va		
0730	0800	Switzerland, Swiss R Intl	17665af	9885af 13790af
0745	0800	Albania, TWR	12070eu	
0745	0800	Guam, TWR/KTWR	15330as	
0755	0800	Albania, TWR	12070eu	

## 0800 UTC - 4AM E / 3AM C / 1AM P

0800	0804	Pakistan, Radio	17835eu	21465eu
0800	0820	Germany, TWR	6045eu	
0800	0820	Monaco, TWR	9870eu	
0800	0825	Belgium, Radio Vlaanderen Intl	5985eu	
0800	0827	Czech Rep, Radio Prague Intl	11600eu	15255eu
0800	0830	Australia, ABC NT Alice Springs	4810eu	9960eu
0800	0830	Australia, ABC NT Katherine	5025do	
0800	0830	Australia, ABC NT Tennant Crk	4910do	
0800	0830	Italy, IRRS 13840va		
0800	0830	Malaysia, RTM Kota Kinabalu	5979do	
0800	0830	Malaysia, Voice of	6175as	15295as
0800	0830	Myanmar, Radio	9730do	
0800	0845	USA, WYFR Okeechobee FL	11580af	
0800	0850	Albania, TWR	12070eu	
0800	0900	Albania, TWR	12070eu	
0800	0900	Anguilla, Caribbean Beacon	6090am	
0800	0900	Australia, Radio	5995pa	9580va
		9660pa 9710pa 11880va	12080va	15420va
		15415as 17715va 17750as	17795va	21725as
		21740va		
0800	0900	Austria, AWR	9660af	17820va
0800	0900	Bhutan, Bhutan BC Service	5030al	6035do
0800	0900	Canada, CFRX Toronto ON	6070do	
0800	0900	Canada, CFVP Calgary AB	6030do	
0800	0900	Canada, CKZN St John's NF	6160do	
0800	0900	Canada, CKZU Vancouver BC	6160do	
0800	0900	Costa Rica, R for Peace Intl	7455am	
0800	0900	Costa Rica, University Network	5030am	6150am
		7375am 9725sa 11870am	13750na	17645as
0800	0900	Eat Guinea, Radio Africa	15185af	
0800	0900	Eat. Guinea, Radio East Africa	15185af	
0800	0900	Germany, Deutsche Welle	6140eu	
0800	0900	Guam, TWR/KTWR	15205as	
0800	0900	Guam, TWR/KTWR	15205as	
0800	0900	Guyana, Voice of	3290do	5950do
0800	0900	Indonesia, Voice of	9525va	
0800	0900	Liberia, ELWA	4760do	
0800	0900	Liberia, R Liberia Intl	6100do	
0800	0900	Malaysia, Radio	7295do	
0800	0900	New Zealand, Radio NZ Intl	9885pa	
0800	0900	Papua New Guinea, NBC	4890do	9675al
0800	0900	Russia, Bible Voice BC 5975eu	17765as	
0800	0900	Russia, University Network	12010eu	17495au
0800	0900	Russia, Voice of Russia 11820eu	21515au	
		17525au 17665au 17665au		
0800	0900	Singapore, SBC Radio One	6150do	
0800	0900	South Africa, Radio League	9750af	21560af
0800	0900	South Korea, R Korea Intl	9570va	13670va
0800	0900	UK, BBC World Service	6190af	7120af
		11760me 11940af 11955as	12095eu	15310as
		15360as 15400af 15485eu	15565eu	17640eu
		17830af 17885as 21470af	21660as	21830as
0800	0900	USA, Armed Forces Network	3903usb	4278usb
		4319usb 4993usb 6350usb	6458usb	10320usb
		12579usb 12689usb	13362usb	
0800	0900	USA, KAIJ Dallas TX	5755va	
0800	0900	USA, KNLS Anchor Point AK	11765as	
0800	0900	USA, KTNB Salt Lk City UT	7505na	
0800	0900	USA, KWHR Naalehu HI	11565pa	17780as
0800	0900	USA, Voice of America 11930va	13620va	13760va
		15150va		
0800	0900	USA, WBCQ Kennebunk, ME	7415na	
0800	0900	USA, WEWN Birmingham AL	5825na	9385eu
0800	0900	USA, WHRI Noblesville IN	5745va	7315am
0800	0900	USA, WJIE Louisville KY	7490am	13595am
0800	0900	USA, WMLK Bethel PA 9465eu	9955eu	
0800	0900	USA, WRMI Miami FL 7385na		
0800	0900	USA, WRNO New Orleans LA	7395am	

0800	0900	as	USA, WSHB Cypress Creek SC	7535eu	9845 oc
0800	0900	tw	USA, WSHB Cypress Creek SC	9845	oc
0800	0900		USA, WTJC Newport NC	9370na	
0800	0900		USA, WWCN Nashville TN	3210na	5070na
			5935na 7560na		
0800	0900	vi	Vanuatu, Radio	3945al	4960do
0815	0900	as	Guam, TWR/KTWR	15330as	
0830	0840	s	Armenia, Voice of	4810eu	15270as
0830	0900		Australia, ABC NT Alice Springs	2310do	4835irr
0830	0900		Australia, ABC NT Katherine	2485do	
0830	0900		Australia, ABC NT Tennant Crk	2325do	
0830	0900		Georgia, Georgian Radio	11910eu	
0830	0900	vi	Solomon Islands, SIBC 5020do	9545do	
0830	0900		Switzerland, Swiss R Intl	21770af	
0840	0850		Turkmenistan, Turkmen Radio	4930as	

## 0900 UTC - 5AM E / 4AM C / 2AM P

0900	0915	as	Russia, Bible Voice BC 5975eu		
0900	0920	mtwhf s	Albania, TWR	12070eu	
0900	0930		Austria, AWR	17670af	
0900	0930		Guam, TWR/KTWR	15330as	
0900	0956		China, China Radio Intl	11730pa	15210pa
0900	1000		Anguilla, Caribbean Beacon	6090am	
0900	1000		Australia, ABC NT Alice Springs	2310do	4835irr
0900	1000		Australia, ABC NT Katherine	2485do	
0900	1000		Australia, ABC NT Tennant Crk	2325do	
0900	1000		Australia, Radio	11880as	17775as
0900	1000		Australia, Voice International	13685as	
0900	1000		Canada, CFRX Toronto ON	6070do	
0900	1000		Canada, CFVP Calgary AB	6030do	
0900	1000		Canada, CKZN St John's NF	6160do	
0900	1000		Canada, CKZU Vancouver BC	6160do	
0900	1000		Costa Rica, R for Peace Intl	7455am	
0900	1000		Costa Rica, University Network	5030am	6150am
			7375am 9725sa 11870am	13750na	17645as
0900	1000		Germany, Deutsche Welle	6140eu	15440eu
0900	1000		Guyana, Voice of	3290do	5950do
0900	1000	as/vi	Italy, IRRS 13840va		
0900	1000		Liberia, R Liberia Intl	6100do	
0900	1000		Malaysia, Radio	7295do	
0900	1000	vi/s	Malta, VO Mediterranean	9630eu	
0900	1000		New Zealand, Radio NZ Intl	9885pa	
0900	1000		Palau, KHBN/VO Hope	15725as	
0900	1000		Papua New Guinea, NBC	4890do	9675al
0900	1000		Russia, University Network	17765as	
0900	1000		Russia, Voice of Russia 11820eu	15275au	17495au
			17525au 17665au 21515au		
0900	1000		Singapore, SBC Radio One	6150do	
0900	1000		UK, BBC World Service	6190af	6195as
			7120af 9605as 9740as	11760me	11940af
			12095eu 15190sa 15310as	15360as	15400af
			15485eu 15565eu 15575as	17640eu	17760as
			17790as 17830af 17885af	21470af	21660as
0900	1000		USA, Armed Forces Network	3903usb	4278usb
			4319usb 4993usb 6350usb	6458usb	10320usb
			12579usb 12689usb	13362usb	
0900	1000		USA, KAIJ Dallas TX	5755va	
0900	1000		USA, KTNB Salt Lk City UT	7505na	
0900	1000		USA, KWHR Naalehu HI	11565pa	17780as
0900	1000		USA, Voice of America 11930va	13610va	13760va
			15150va		
0900	1000		USA, WBCQ Kennebunk, ME	7415na	
0900	1000		USA, WEWN Birmingham AL	5825na	
0900	1000		USA, WHRA Greenbush ME	7580va	
0900	1000		USA, WHRI Noblesville IN	5745va	7315am
0900	1000		USA, WJIE Louisville KY	7490am	13595am
0900	1000		USA, WRMI Miami FL 7385na		
0900	1000	th	USA, WSHB Cypress Creek SC	7535eu	
0900	1000		USA, WTJC Newport NC	9370na	
0900	1000		USA, WWCN Nashville TN	3210na	5070na
			5935na 7560na		
0900	1000	vi	Vanuatu, Radio	3945al	4960do
0920	0929		Croatia, Voice of	13820pa	
0930	1000		Georgia, Georgian Radio	11910me	
0930	1000		Lithuania, R Vilnius	9710eu	
0930	1000		Netherlands, Radio	9785pa	13710pa

## 1000 UTC - 6AM E / 5AM C / 3AM P

1000	1027		Vietnam, Voice of	9840as	12020au
1000	1029		Czech Rep, Radio Prague Intl	21745va	
1000	1030		Germany, Deutsche Welle	17615as	17715as
1000	1030		Guam, AWR/KSDA	11930as	
1000	1030		Mongolia, Voice of	12085as	
1000	1030		Sri Lanka, SLBC	4940as	
1000	1030		UK, BBC World Service	9605as	21660as
1000	1030		UK, RTE Radio	15280au	
1000	1045		USA, KWHR Naalehu HI	11565pa	
1000	1056		China, China Radio Intl	11730pa	15210pa
1000	1056		North Korea, Voice of 3560as	9335am	9849as



# Shortwave Guide



1000	1100	11710am 11735as		
1000	1100	Anguilla, Caribbean Beacon	6090am	
1000	1100	Australia, ABC NT Alice Springs	2310do	4835irr
1000	1100	Australia, ABC NT Katherine	2485do	
1000	1100	Australia, ABC NT Tennant Crk	2325do	
1000	1100	Australia, Radio	9580va	11880as
		15240as 15415as 17580pa	17750as	17795va
		21725va 21820as		
1000	1100	Australia, Voice International	13685as	
1000	1100	as Bhutan, Bhutan BC Service	5030al	6035do
1000	1100	Canada, CFRX Toronto ON	6070do	
1000	1100	Canada, CFVP Calgary AB	6030do	
1000	1100	Canada, CKZN St John's NF	6160do	
1000	1100	Canada, CKZU Vancouver BC	6160do	
1000	1100	Costa Rica, R for Peace Intl	7455am	
1000	1100	Costa Rica, University Network	5030am	6150am
		7375am 9725sa 11870am	13750na	17645as
			6140eu	15440eu
1000	1100	Germany, Deutsche Welle		
1000	1100	Guam, AWR/KSDA	11560as	
1000	1100	Guyana, Voice of	3290do	5950do
1000	1100	India, All India Radio	13710as	15020as
		15260as 17510au	17800as	17895au
1000	1100	as/vl Italy, IRRS 13840va		
1000	1100	Japan, Radio	9695as	15590as
1000	1100	Liberia, R Liberia Intl	6100do	
1000	1100	Libya, Voice of Africa	21695af	
1000	1100	Malaysia, Radio	7295do	
1000	1100	Netherlands, Radio	9785pa	
1000	1100	New Zealand, Radio NZ Intl	13710pa	
1000	1100	Palau, KHBN/VO Hope	9885pa	
1000	1100	Papua New Guinea, NBC	15725as	
1000	1100	Russia, University Network	4890do	9675al
1000	1100	Singapore, SBC Radio One	17765as	
1000	1100	South Africa, Radio Veritas	6150do	
1000	1100	UK, BBC World Service	7240af	
		7120af 9740as 11760me	6190af	6195va
		15310as 15360as 15485eu	11940af	12095eu
		17640eu 17760as 17790as	15565eu	15575as
		World Service	17885af	21470af
1000	1100as	USA, Armed Forces Network	17830af	
1000	1100	4319usb 4993usb 6350usb	3903usb	4278usb
		12579usb	6458usb	10320usb
			12689usb	13362usb
1000	1100	USA, KAIJ Dallas TX	5755va	
1000	1100	USA, KTBN Salt Lk City UT	7505na	
1000	1100	USA, KWHR Naalehu HI	9930as	
1000	1100	USA, Voice of America 5745am	7370am	9590am
		9770va 13620va 15240va	7415na	
1000	1100	USA, WBQC Kennebunk, ME	15425va	
1000	1100	USA, WEWN Birmingham AL	7520na	
1000	1100	USA, WHRI Noblesville IN	9495va	9840am
1000	1100	USA, WJIE Louisville KY	7490am	13595am
1000	1100	USA, WRMI Miami FL 9955am		
1000	1100	USA, WRNO New Orleans LA	7395am	
1000	1100	USA, WSHB Cypress Creek SC	6095am	11780am
1000	1100	USA, WSHB Cypress Creek SC	11780as	
1000	1100	USA, WTJC Newport NC	9370na	
1000	1100	USA, WWCR Nashville TN	5070na	5935na
		7560na 9475na		
1000	1100	USA, WYFR Okeechobee FL	5950na	
1000	1100	Vatican City, Vatican Radio	5890eu	
1000	1200	USA, WSHB Cypress Creek SC	9455am	11780as
1015	1030	Israel, Kol Israel	15640va	17545va
1015	1030	UK, BBC World Service	11680eu	15325eu
		17695eu		
1030	1045	mtwhf Ethiopia, Radio	5990do	7110do
1030	1100	Iran, VOIRI 15215as	15375as	15480as
		21730as		21470as
1030	1100	Netherlands, Radio	5965na	6045eu
1030	1100	Sri Lanka, SLBC	4940as	11835as
		17850as		15120as
1030	1100	UAE, Emirates Radio	13675eu	15370eu
		21605eu		15395eu
1030	1100	UK, BBC World Service	9605as	11945as
		15285as 21660as		

## 1100 UTC - 7AM E / 6AM C / 4AM P

1100	1104	Pakistan, Radio	17835eu	21465eu
1100	1105	New Zealand, Radio NZ Intl	9885pa	
1100	1125	Netherlands, Radio	9785pa	
1100	1127	Iran, VOIRI 15215as	15375as	15480as
		21730as		21470as
1100	1127	Vietnam, Voice of	7285as	
1100	1130	as Bhutan, Bhutan BC Service	5030al	6035do
1100	1130	UK, BBC World Service	15400af	17790sa
1100	1130	as UK, BBC World Service	15190va	
1100	1200	Anguilla, Caribbean Beacon	11775am	
1100	1200	Australia, ABC NT Alice Springs	2310do	4835irr
1100	1200	Australia, ABC NT Katherine	2485do	
1100	1200	Australia, ABC NT Tennant Crk	2325do	
1100	1200	Australia, Radio	5995pa	9475as
		9580va 9660pa 11650va	11880as	12080va
		15240va 15415as 17580pa	17750as	17795va

1100	1200	21725va 21820as		
1100	1200	Australia, Voice International	13685as	
1100	1200	Canada, CFRX Toronto ON	6070do	
1100	1200	Canada, CFVP Calgary AB	6030do	
1100	1200	Canada, CKZN St John's NF	6160do	
1100	1200	Canada, CKZU Vancouver BC	6160do	
1100	1200	Costa Rica, R for Peace Intl	7455am	
1100	1200	Costa Rica, University Network	5030am	6150am
		7375am 9725sa 11870am	13750na	17645as
1100	1200	Ecuador, HCJB	12005am	15115na
1100	1200	Germany, Deutsche Welle	6140eu	15110as
		17820eu		
1100	1200	as/vl Italy, IRRS 13840va		
1100	1200	Japan, Radio	9695as	15590as
1100	1200	Jordan, Radio	11690eu	
1100	1200	Libya, Voice of Africa	21675af	21695af
		21810af		
1100	1200	Malaysia, Radio	7295do	
1100	1200	Netherlands, Radio	5965na	6045eu
1100	1200	Papua New Guinea, NBC	4890do	9675al
1100	1200	Russia, University Network	17765as	
1100	1200	Singapore, R Singapore Intl	6150as	9600as
1100	1200	Taiwan, R Taipei Intl	7445as	11985as
1100	1200	UK, BBC World Service	6190af	6195va
		7120af 9740as 11760me	11940af	12095eu
		15190va 15310as 15485eu	15565eu	15575eu
		17640eu 17760as 17790as	17830af	17885af
		21470af		
1100	1200	USA, Armed Forces Network	3903usb	4278usb
		4319usb 4993usb 6350usb	6458usb	10320usb
		12579usb	12689usb	13362usb
1100	1200	USA, KAIJ Dallas TX	5755va	
1100	1200	USA, KTBN Salt Lk City UT	7505na	
1100	1200	USA, KWHR Naalehu HI	9930as	11565pa
1100	1200	USA, Voice of America 6160va	9645va	9760va
		13610va 15160va 15240va	15425va	
1100	1200	USA, WEWN Birmingham AL	7520na	
1100	1200	USA, WHRI Noblesville IN	9495va	9840am
1100	1200	USA, WINB Red Lion PA	13570am	
1100	1200	USA, WJIE Louisville KY	7490am	13595am
1100	1200	USA, WRMI Miami FL 9955am		
1100	1200	USA, WRNO New Orleans LA	7395am	
1100	1200	USA, WSHB Cypress Creek SC	6095am	
1100	1200	USA, WTJC Newport NC	9370na	
1100	1200	USA, WWCR Nashville TN	5070na	5935na
		7560na 15825na		
1100	1200	USA, WYFR Okeechobee FL	5950na	11725sa
		11830sa		
1106	1200	New Zealand, Radio NZ Intl	9885pa	
1115	1145	Nepal, Radio	3230as	5005as
		7164as		6100as
1130	1145	UK, BBC World Service	7135as	11920as
1130	1155	Belgium, Radio Vlaanderen Intl	7390as	
1130	1157	Czech Rep, Radio Prague Intl	11640va	21745va
1130	1200	Bulgaria, Radio	11700eu	15700eu
1130	1200	South Korea, R Korea Intl	9650na	
1130	1200	Sri Lanka, SLBC	4940as	
1130	1200	Sweden, Radio	17505va	17840na
1130	1200	f Vatican City, Vatican Radio	5595va	17515va

## 1200 UTC - 8AM E / 7AM C / 5AM P

1200	1225	Netherlands, Radio	5965na	6045eu
1200	1230	France Radio France Intl	15540af	25820af
1200	1230	Libya, Voice of Africa	15610af	17695af
1200	1230	Uzbekistan, Radio Tashkent	5060as	5975as
		6025as 9715as		
1200	1245	USA, WYFR Okeechobee FL	5950na	
1200	1256	China, China Radio Intl	9730as	9760pa
		11760pa 11855as 11980as	15415pa	
1200	1256	Romania, R Romania Intl	17790eu	
1200	1259	Canada, Radio Canada Intl	9660as	11730as
1200	1300	Anguilla, Caribbean Beacon	11775am	
1200	1300	Australia, ABC NT Katherine	2485do	
1200	1300	Australia, ABC NT Tennant Crk	2325do	
1200	1300	Australia, Radio	5995pa	9475as
		9580va 9660pa 11650va	11880as	12080va
		15415as 15240pa 17580pa	17725va	21820as
1200	1300	Australia, Voice International	13685as	
1200	1300	Canada, CBC Northern Service	9625do	
1200	1300	Canada, CFRX Toronto ON	6070do	
1200	1300	Canada, CFVP Calgary AB	6030do	
1200	1300	Canada, CKZN St John's NF	6160do	
1200	1300	Canada, CKZU Vancouver BC	6160do	
1200	1300	China, Voice of Hope	7485as	
1200	1300	Costa Rica, R for Peace Intl	7455am	
1200	1300	Costa Rica, University Network	5030am	6150am
		7375am 9725sa 11870am	13750na	17645as
1200	1300	Ecuador, HCJB	12005am	15115na
1200	1300	Germany, Deutsche Welle	6140eu	15440eu
1200	1300	Germany, Overcomer Ministries	5975eu	
1200	1300	as/vl Italy, IRRS 13840va		
1200	1300	Jordan, Radio	11690eu	

# Shortwave Guide



1200	1300	Libya, Voice of Africa	21675af		
1200	1300	Malaysia, Radio	7295do		
1200	1300	New Zealand, Radio NZ Intl	9885pa		
1200	1300	Papua New Guinea, NBC	4890do	9675al	
1200	1300	Russia, University Network	17765as		
1200	1300	Russia, Voice of Hope	13590as		
1200	1300	Singapore, R Singapore Intl	6150as	9600as	
1200	1300	Taiwan, R Taipei Intl	7130as		
1200	1300	UK, BBC World Service	6190af	6195va	
		7120af 9740as	11760me	11940af	12095eu
		15190as 15310as	15485eu	15565eu	15575me
		17640eu 17760as	17790as	17830af	17885af
		21470af			
1200	1300	Ukraine, R Ukraine Intl	15415eu		
1200	1300	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb	6350usb	6458usb	10320usb
		12579usb	12689usb	13362usb	
1200	1300	USA, KAIJ Dallas TX	5755va		
1200	1300	USA, WTNB Salt Lk City UT	7505na		
1200	1300	USA, KWHR Naalehu HI	9930as	11565pa	
1200	1300	USA, Voice of America	6160va	9645va	13610va
		15160va 15240va	15425va		
1200	1300	USA, WEWN Birmingham AL	7520na		
1200	1300	USA, WHRI Noblesville IN	9495na	9840am	
1200	1300	USA, WINB Red Lion PA	13570am		
1200	1300	USA, WJIE Louisville KY	7490am	13595am	
1200	1300	USA, WRMI Miami FL	9955am		
1200	1300	USA, WRNO New Orleans LA	7395am		
1200	1300	USA, WSHB Cypress Creek SC	6095am	9880as	
1200	1300	USA, WSHB Cypress Creek SC	9455am	9880as	
1200	1300	USA, WSHB Cypress Creek SC	9880as		
1200	1300	USA, WTJC Newport NC	9370na		
1200	1300	USA, WWCR Nashville TN	5070na	5935na	
		7560na 15825na			
1200	1300	USA, WYFR Okeechobee FL	11970na	13695na	
1215	1300	Egypt, Radio Cairo	17775as		
1230	1245	UK, BBC World Service	21640af		
		Vietnam, Voice of	9840as	12020as	
1230	1300	Australia, Radio	17750as		
1230	1300	Bangladesh, Bangla Betar	7185as	9550as	
1230	1300	Sri Lanka, SLBC	4940as	6005as	6075as
		9770as 15745as			
1230	1300	Sweden, Radio	17505va	17840na	
1230	1300	Thailand, Radio	9700as		
1230	1300	Turkey, Voice of	17595va	17830eu	
1230	1300	UAE, Gospel For Asia	15590as		
1230	1300	UK, Wales Radio Intl	17845au		

## 1300 UTC - 9AM E / 8AM C / 6AM P

1300	1305	New Zealand, Radio NZ Intl	9885pa		
1300	1310	Turkmenistan, Turkmen Radio	5015as		
1300	1330	Australia, Radio	11880as		
1300	1330	Egypt, Radio Cairo	17775as		
1300	1330	Turkey, Voice of	17595as	17695au	17830eu
1300	1330	UAE, AWR 17740as			
1300	1330	USA, Gospel For Asia	15590as		
1300	1345	USA, WYFR Okeechobee FL	11970na		
1300	1356	China, China Radio Intl	9570na	11760pa	
		11900pa 11980as	15180as		
1300	1356	North Korea, Voice of	4405as	7505eu	9335na
		11335eu 11710am	13760eu		
1300	1400	Anguilla, Caribbean Beacon	11775am		
1300	1400	Australia, Radio	5995pa	6020pa	9580va
		9660pa 11650va	12080va	15240pa	15415as
		17580pa 21725va	21820as		
1300	1400	Australia, Voice International	13685as		
1300	1400	Canada, CBC Northern Service	9625do		
1300	1400	Canada, CFRX Toronto ON	6070do		
1300	1400	Canada, CFPV Calgary AB	6030do		
1300	1400	Canada, CKZN St John's NF	6160do		
1300	1400	Canada, CKZU Vancouver BC	6160do		
1300	1400	Canada, Radio Canada Intl	9515am	13650am	
		17710am			
1300	1400	China, Voice of Hope	7485as		
1300	1400	Costa Rica, R for Peace Intl	7455am	15040am	
1300	1400	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa	11870am	13750na	17645as
1300	1400	Ecuador, HCJB	12005am	15115na	21455usb
1300	1400	Germany, Deutsche Welle	6140eu		
1300	1400	Germany, Overcomer Ministries	13810me		
1300	1400	Jordan, Radio	11690eu		
1300	1400	Libya, Voice of Africa	21675af	21695af	
1300	1400	Malaysia, Radio	7295do		
1300	1400	Poland, Radio Polonia	6095eu	9525eu	
1300	1400	Russia, University Network	17765as		
1300	1400	Singapore, R Singapore Intl	6150as	9600as	
1300	1400	South Africa, Channel Africa	11720af	17725af	
		21760af			
1300	1400	South Korea, R Korea Intl	9570as	13670as	
1300	1400	UK, BBC World Service	6190af	6195va	
		7120af 9740as	11760me	11940af	12095eu

1300	1400	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb	6350usb	6458usb	10320usb
		12579usb	12689usb	13362usb	
1300	1400	USA, KAIJ Dallas TX	5755va		
1300	1400	USA, KNLS Anchor Point AK		11765as	
1300	1400	USA, KTNB Salt Lk City UT		7505na	
1300	1400	USA, KWHR Naalehu HI		9930as	11565pa
1300	1400	USA, Voice of America	6160va	9645va	9760va
		15160va 15425va			
1300	1400	USA, WBCQ Kennebunk, ME		7415na	
1300	1400	USA, WBCQ Kennebunk, ME		17494na	
1300	1400	USA, WEWN Birmingham AL		7520na	
1300	1400	USA, WHRA Greenbush ME		17560va	
1300	1400	USA, WHRI Noblesville IN		9840am	15105va
1300	1400	USA, WINB Red Lion PA		13570am	
1300	1400	USA, WJIE Louisville KY		7490am	13595am
1300	1400	USA, WRMI Miami FL		15725na	
1300	1400	USA, WRNO New Orleans LA		7395am	
1300	1400	USA, WSHB Cypress Creek SC		9430na	7460as
1300	1400	USA, WSHB Cypress Creek SC		9455am	7460as
1300	1400	USA, WSHB Cypress Creek SC		7460as	
1300	1400	USA, WTJC Newport NC		9370na	
1300	1400	USA, WWCR Nashville TN		7560na	12160na
		13845na 15825na			
1300	1400	USA, WYFR Okeechobee FL		11740na	11830na
		11550as 17510sa	17675na		
1306	1400	New Zealand, Radio NZ Intl		6095pa	
1330	1350	UAE, Emirates Radio	13630eu	13675eu	15400eu
		21605eu			
1330	1357	Vietnam, Voice of	7145eu	9730eu	
1330	1400	Australia, Radio	11660as	17750as	
1330	1400	Germany, Voice of Hope		15775as	
1330	1400	Guam, AWR/KSDA	11980as	15275as	
1330	1400	India, All India Radio	9690as	11620as	13710as
1330	1400	Laos, Lao National Radio		7145as	
1330	1400	Serbia Montenegro, R Yugoslavia		11835au	
1330	1400	Sweden, Radio	17505va	17840na	
1330	1400	UAE, AWR 15320as			
1330	1400	UK, BBC World Service		15105af	21640af
1330	1400	Uzbekistan, Radio Tashkent		5060as	5975as
		6025as 9715as			

## 1400 UTC - 10AM E / 9AM C / 7AM P

1400	1415	mtw	UK, BBC World Service	11860af	15420af
			21490af		
1400	1429		Czech Rep, Radio Prague Intl	21745va	
1400	1430		Ecuador, HCJB	12005am	21455usb
1400	1430		Germany, Voice of Hope	15775as	
1400	1430		Thailand, Radio	9830as	
1400	1455	as	South Africa, Channel Africa	11720af	17725af
			21760af		
1400	1456		China, China Radio Intl	7405na	9700as
			11675pa 11765as	13685af	15125af
1400	1456		Romania, R Romania Intl	15365eu	17790eu
1400	1500		Anguilla, Caribbean Beacon	11775am	
1400	1500		Australia, Radio	9580va	9660pa
			11660as 12080va	15240pa	15415as
			17580pa 17750as	21725va	
1400	1500		Australia, Voice International	13685as	
1400	1500		Canada, CBC Northern Service	9625do	
1400	1500		Canada, CFRX Toronto ON	6070do	
1400	1500		Canada, CFPV Calgary AB	6030do	
1400	1500		Canada, CKZN St John's NF	6160do	
1400	1500		Canada, CKZU Vancouver BC	6160do	
1400	1500	mtwhf	Canada, Radio Canada Intl	9515am	13655am
			17710am		
1400	1500		Costa Rica, R for Peace Intl	7455am	15040am
1400	1500		Costa Rica, University Network	5030am	6150am
			7375am 9725sa	11870am	13750na
1400	1500		France Radio France Intl	7175af	9580af
			17620af		
1400	1500		Germany, Deutsche Welle	6140eu	
1400	1500		Germany, Overcomer Ministries	13810me	
1400	1500	as/vl	India, All India Radio	9690as	11620as
1400	1500		Italy, IRRS	13840va	
1400	1500		Japan, Radio	7200as	9505na
			11730as		9845as
1400	1500		Jordan, Radio	11690eu	
1400	1500		Libya, Voice of Africa	21675af	
1400	1500	occ	New Zealand, Radio NZ Intl	6095pa	
1400	1500		Oman, Radio	15355eu	
1400	1500		Russia, University Network	17765as	
1400	1500		Singapore, SBC Radio One	6150do	
1400	1500		Taiwan, R Taipei Intl	15265as	
1400	1500		UK, BBC World Service	6135as	6190af
			6195as 7120af	9740as	11940af
			15190va 15310as	15485eu	15565eu
			17640eu 17790as	17830af	21470af
1400	1500		USA, Armed Forces Network	3903usb	4278usb



# Shortwave Guide



1400	1500	4319usb 4993usb 6350usb 6458usb 10320usb
1400	1500	12579usb 12689usb 13362usb
1400	1500	USA, KAJI Dallas TX 13815va
1400	1500	USA, KJES Vado NM 11715na
1400	1500	USA, KTBN Salt Lk City UT 7505na
1400	1500	USA, KWHR Naalehu HI 9930as
1400	1500	USA, Voice of America 6160va 7125va 9760va
1400	1500	15160va 15255va 15425va
1400	1500	USA, WBCQ Kennebunk, ME 17495na
1400	1500	USA, WEWN Birmingham AL 9955na
1400	1500	USA, WHRA Greenbush ME 17650va
1400	1500	USA, WHRI Noblesville IN 9840am 15105va
1400	1500	USA, WINB Red Lion PA 13570am
1400	1500	USA, WJIE Louisville KY 7490am 13595am
1400	1500	USA, WRMI Miami FL 15725na
1400	1500	USA, WRNO New Orleans LA 7395am
1400	1500	USA, WTJC Newport NC 9370na
1400	1500	USA, WWCR Nashville TN 9475na 12160na
1400	1500	13845na 15825na
1400	1500	USA, WYFR Okeechobee FL 11740na 11830na
1400	1500	11550as 17510sa 17675na
1415	1420	Nepal, Radio 3230as 5005as 6100as
1430	1450	7164as
1430	1450	vi Vatican City, Vatican Radio 9865as 13765as
1430	1500	15235as
1430	1500	Australia, Radio 9475as
1430	1500	Myanmar, Radio 5040do 5985do
1430	1500	Netherlands, Radio 9860as 11835as 12075as
1445	1500	15220na
1445	1500	Guam, TWR/KTWR 15330as
1445	1500	UK, BBC World Service 6140as 7205as

## 1500 UTC - 11AM E / 10AM C / 8AM P

1500	1528	s	Hungary, Radio Budapest 6025eu 9715eu
1500	1530		Mexico, Radio Mexico Intl 9705am 11770am
1500	1530		Mongolia, Voice of 12015eu
1500	1530		South Africa, Channel Africa 17725af
1500	1545		Guam, TWR/KTWR 15330as
1500	1556		China, China Radio Intl 7405as 7160as
1500	1556		9785as 13685af 15125na 17720na
1500	1556		North Korea, Voice of 4405as 7505eu 9335am
1500	1557		11335eu 11710am
1500	1559	mtwhf	Canada, Radio Canada Intl 15360as 17870as
1500	1559		Canada, Radio Canada Intl 9515am 13655am
1500	1600		17710am
1500	1600		Anguilla, Caribbean Beacon 11775am
1500	1600		Australia, Radio 9475as 9580pa 9660pa
1500	1600		11650va 11660as 12080va 15240pa 15415as
1500	1600		15515va 17580pa 17750as 21725va
1500	1600		Australia, Voice International 13665as
1500	1600		Canada, CBC Northern Service 9625do
1500	1600		Canada, CFRX Toronto ON 6070do
1500	1600		Canada, CFVP Calgary AB 6030do
1500	1600		Canada, CKZN St John's NF 6160do
1500	1600		Canada, CKZU Vancouver BC 6160do
1500	1600		Costa Rica, R for Peace Intl 7455am 15040am
1500	1600		Costa Rica, University Network 5030am 6150am
1500	1600		7375am 9725sa 11870am 13750na 17645as
1500	1600		Germany, Deutsche Welle 6140eu
1500	1600	a	Germany, Overcomer Ministries 6110eu
1500	1600		Japan, Radio 7200as 9750as 9845as
1500	1600		11730as
1500	1600		Jordan, Radio 11690na
1500	1600	s	Latvia, Laser Radio 5935eu
1500	1600		Myanmar, Radio 5040do 5985do
1500	1600		Netherlands, Radio 15220na 11835as 12075as
1500	1600		15220na
1500	1600	occ	New Zealand, Radio NZ Intl 6095pa
1500	1600		Russia, Voice of Russia 6205as 7350as 9590as
1500	1600		9875as 9920as 11500as
1500	1600		Singapore, SBC Radio One 6150do
1500	1600		UK, BBC World Service 5975as 6135as
1500	1600		6190af 6195as 7120af 9740as 11940af
1500	1600		12095eu 15190va 15310as 15485eu
1500	1600		15565eu 17790as 17830af 21470af 21660af
1500	1600		USA, Armed Forces Network 3903usb 4278usb
1500	1600		4319usb 4993usb 6350usb 6458usb 10320usb
1500	1600		12579usb 12689usb 13362usb
1500	1600		USA, KAJI Dallas TX 13815va
1500	1600		USA, KJES Vado NM 11715na
1500	1600		USA, KTBN Salt Lk City UT 7505na
1500	1600		USA, KWHR Naalehu HI 9930as
1500	1600		USA, Voice of America 6160va 7125va 9590va
1500	1600		9700va 9760va 9845va 12040va 15205va
1500	1600		15255va 15550va
1500	1600		USA, WBCQ Kennebunk, ME 17495na
1500	1600		USA, WEWN Birmingham AL 9955na
1500	1600		USA, WHRA Greenbush ME 17650va
1500	1600		USA, WHRI Noblesville IN 9840am 15105va
1500	1600		USA, WINB Red Lion PA 13570am
1500	1600		USA, WJIE Louisville KY 7490am 13595am
1500	1600		USA, WRMI Miami FL 15725na

1500	1600	USA, WRNO New Orleans LA 7395am
1500	1600	USA, WTJC Newport NC 9370na
1500	1600	USA, WWCR Nashville TN 9475na 12160na
1500	1600	13845na 15825na
1500	1600	USA, WYFR Okeechobee FL 6280as 11830na
1500	1600	15520na 17760na
1515	1530	Germany, Voice of Hope 9860me
1515	1530	a Russia, Bible Voice BC 9860eu
1530	1545	Bangladesh, Bangla Betar 4882as 15520as
1530	1545	UK, BBC World Service 11685as 15540as
1530	1550	as Vatican City, Vatican Radio 9865va 13765af
1530	1555	15235af
1530	1600	Israel, Kol Israel 15640va 17545va
1530	1600	Iran, VOIRI 7115as 7195eu 9610as 11640as
1530	1600	a 11775as 11835as
1540	1550	Russia, Bible Voice BC 15775eu
1545	1600	s h Turkmenistan, Turkmen Radio 4930as
1545	1600	Bangladesh, Bangla Betar 4882as 15520as

## 1600 UTC - 12PM E / 11AM C / 9AM P

1600	1615	Pakistan, Radio 11570me 15070me 15530af
1600	1625	17725af
1600	1625	Netherlands, Radio 15220na 11835as 12075as
1600	1627	15220na
1600	1630	Vietnam, Voice of 7145eu 9730eu
1600	1630	Mexico, Radio Mexico Intl 9705am 11770am
1600	1630	South Africa, Channel Africa 9525af
1600	1630	UAE, Gospel For Asia 11695as
1600	1630	USA, KWHR Naalehu HI 9930as
1600	1635	UAE, Emirates Radio 13630eu 13675eu 15400eu
1600	1635	21605eu
1600	1645	USA, WYFR Okeechobee FL 6280as 17790as
1600	1650	occ New Zealand, Radio NZ Intl 6095pa
1600	1656	China, China Radio Intl 7190af 13650af
1600	1656	North Korea, Voice of 3560as 9975af 11735af
1600	1659	as Canada, Radio Canada Intl 9515am 13655am
1600	1700	17710am
1600	1700	Algeria, Radio Algiers Intl 11715eu 15160eu
1600	1700	Anguilla, Caribbean Beacon 11775am
1600	1700	Australia, Radio 9475as 9580pa 9660pa
1600	1700	11650va 11660as 11880as 12080va 15240pa
1600	1700	15415as 15515va 17580pa 21725va
1600	1700	Australia, Voice International 13665as
1600	1700	Canada, CBC Northern Service 9625do
1600	1700	Canada, CFRX Toronto ON 6070do
1600	1700	Canada, CFVP Calgary AB 6030do
1600	1700	Canada, CKZN St John's NF 6160do
1600	1700	Canada, CKZU Vancouver BC 6160do
1600	1700	Costa Rica, R for Peace Intl 7455am 15040am
1600	1700	Costa Rica, University Network 5030am 6150am
1600	1700	7375am 9725sa 11870am 13750na 17645as
1600	1700	Ethiopia, Radio 5990do 9560af 9704af 11800af
1600	1700	France Radio France Intl 11615af 11995af
1600	1700	12015af 15605af 17850af
1600	1700	Germany, Deutsche Welle 6140eu 6170as
1600	1700	7225as 17595as
1600	1700	a Germany, Overcomer Ministries 6110eu
1600	1700	Guam, AWR/KSDA 15235as 15355as
1600	1700	Jordan, Radio 11690na
1600	1700	s Latvia, Laser Radio 5935eu
1600	1700	Libya, Voice of Africa 15660af 17695af
1600	1700	Russia, Voice of Russia 4940as 4965as 4975as
1600	1700	6005me 7305as 9590as 9830me
1600	1700	South Africa, Radio Veritas 3230af
1600	1700	South Korea, R Korea Intl 5975va 9515va
1600	1700	9870va
1600	1700	Sri Lanka, SLBC 4940as
1600	1700	Taiwan, R Taipei Intl 11560as
1600	1700	UAE, AWR 17630as
1600	1700	UK, BBC World Service 3915as 5975as
1600	1700	6190eu 6195as 7120af 7160as 9410eu
1600	1700	9510as 11940af 12095eu 15190va 15310as
1600	1700	15400af 15475eu 15565eu 17790as 17830af
1600	1700	21470af
1600	1700	USA, Armed Forces Network 3903usb 4278usb
1600	1700	4319usb 4993usb 6350usb 6458usb 10320usb
1600	1700	12579usb 12689usb 13362usb
1600	1700	USA, KAJI Dallas TX 13815va
1600	1700	USA, KJES Vado NM 11715na
1600	1700	USA, KTBN Salt Lk City UT 15590na
1600	1700	USA, Voice of America 6160va 7125va 9700va
1600	1700	9760va 9850af 12080va 13600va 13695af
1600	1700	15205va 15225af 15255va 15410af 15580af
1600	1700	17895va
1600	1700	USA, WBCQ Kennebunk, ME 17495na
1600	1700	USA, WEWN Birmingham AL 13615na
1600	1700	USA, WHRA Greenbush ME 17650va
1600	1700	USA, WHRI Noblesville IN 13760na 15105va
1600	1700	USA, WINB Red Lion PA 13570am
1600	1700	USA, WJIE Louisville KY 7490am 13595am
1600	1700	USA, WMLK Bethel PA 9465eu

# Shortwave Guide



1600	1700	USA, WRMI Miami FL	15725na		
1600	1700	USA, WRNO New Orleans LA	7395am		
1600	1700	USA, WSHB Cypress Creek SC	18910af		
1600	1700	USA, WTJC Newport NC	9370na		
1600	1700	USA, WWCN Nashville TN	9475na	12160na	
		13845na 15825na			
1600	1700	USA, WWRB Manchester TN	9320na	12172na	
1600	1700	USA, WYFR Okeechobee FL	6280as	11830na	
		15520na 17760na 18980eu	21455eu		
1600	1700	Zimbabwe, SWR Africa	6145do		
1615	1630	UK, BBC World Service	15420af		
1615	1700	UK, BBC World Service	21490af		
1630	1700	Australia, Radio	17750as		
1630	1700	Austria, AWR	9850af		
1630	1700	Egypt, Radio Cairo	15255af		
1630	1700	Georgia, Georgian Radio		6180me	
1630	1700	UK, BBC World Service	9530eu	11735eu	
		13645eu 15420af			
1645	1700	Tajikistan, Radio	7245as		
1650	1700	mtwhf New Zealand, Radio NZ Intl	6095pa		

## 1700 UTC - 1PM E / 12PM C / 10AM P

1700	1727	Czech Rep, Radio Prague Intl	5930va	17485va	
1700	1730	France Radio France Intl	11615af	11995af	
		12015af 15605af 17850af			
1700	1730	Jordan, Radio	11690na		
1700	1730	wh a Russia, Bible Voice BC	7435me		
1700	1730	South Africa, Channel Africa		17870af	
1700	1730	Vietnam, Voice of	9745eu		
1700	1746	UK, BBC World Service	6005af	9630af	
1700	1750	mtwhf New Zealand, Radio NZ Intl	6095pa		
1700	1756	China, China Radio Intl	7150af	9570af	
		9695as 11910af			
1700	1756	Romania, R Romania Intl	7155eu	9625eu	
		9690eu 11940eu			
1700	1800	Anguilla, Caribbean Beacon	11775am		
1700	1800	Australia, Radio	9475as	9580va	9660pa
		9815pa 11880va 12080va	15240pa	15515va	
		17580pa 21725pa 21820as			
1700	1800	Australia, Voice International	11680as		
1700	1800	Canada, CBC Northern Service	9625do		
1700	1800	Canada, CFRX Toronto ON	6070do		
1700	1800	Canada, CFPV Calgary AB	6030do		
1700	1800	Canada, CKZN St John's NF	6160do		
1700	1800	Canada, CKZU Vancouver BC	6160do		
1700	1800	Costa Rica, R for Peace Intl	7455am	15040am	
1700	1800	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa 11870am	13750na	17645as	
1700	1800	Egypt, Radio Cairo	15255af		
1700	1800	Germany, Deutsche Welle	6140eu		
1700	1800	Germany, Overcomer Ministries	6110eu		
1700	1800	Germnay, R Africa Intl	13820af	15715af	
1700	1800	a Greece, Voice of	9420eu	15725eu	17705na
1700	1800	a Guam, AWR/KSDA	11560as		
1700	1800	Japan, Radio	9505na	11970na	15355af
1700	1800	Libya, Voice of Africa	17635af	17695af	17880af
1700	1800	Russia, Voice of Russia	9470me	9590as	9830me
1700	1800	South Africa, Radio Veritas		3230af	
1700	1800	Sri Lanka, SLBC	4940as		
1700	1800	Taiwan, R Taipei Intl	11550as		
1700	1800	UK, BBC World Service	3255af	3915as	
		5975as 6190af 6195eu	7120af	7160as	
		9410eu 9510as 12095eu	15310as	15400af	
		15420af 15485eu 15565eu	17830af	21470af	
1700	1800	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb 6350usb	6458usb	10320usb	
		12579usb 12689usb	13362usb		
1700	1800	USA, KAIJ Dallas TX	13815va		
1700	1800	USA, KTBN Salt Lk City UT		15590na	
1700	1800	USA, Voice of America	6160va	7125va	7170va
		9645va 9700va 9760va	9850af	15255va	
		15410af 15580af 17895af			
1700	1800	mtwhf USA, Voice of America	5990va	6045va	7215va
		9770va 9785va			
1700	1800	USA, WBCQ Kennebunk, ME	17495na		
1700	1800	USA, WEWN Birmingham AL	13615na		
1700	1800	USA, WHRA Greenbush ME	17650va		
1700	1800	USA, WHRI Noblesville IN	13760na	15105va	
1700	1800	USA, WINB Red Lion PA	13570am		
1700	1800	USA, WJIE Louisville KY	7490am	13595am	
1700	1800	USA, WMLK Bethel PA	9465eu	15265eu	
1700	1800	USA, WRMI Miami FL	15725na		
1700	1800	USA, WRNO New Orleans LA	7395am		
1700	1800	USA, WSHB Cypress Creek SC	15190af		
1700	1800	USA, WTJC Newport NC	9370na		
1700	1800	USA, WWCN Nashville TN	9475na	12160na	
		13845na 15825na			
1700	1800	USA, WWRB Manchester TN	9320na	12172na	
1700	1800	USA, WYFR Okeechobee FL	18980eu	21455eu	
1700	1800	Zimbabwe, SWR Africa	6145do		
1715	1730	Vatican City, Vatican Radio	4005eu	5890eu	
		7250eu 9645eu 15595eu			

1725	1715	mtwhf UK, United Nations Radio	21535af	7150af	17720af
1730	1745	UK, BBC World Service	9525va	3390va	7230va
1730	1745	mw UK, BBC World Service	15585eu	6050eu	11955eu
1730	1745	mtwhf UK, United Nations Radio	17810af	7150af	15495me
1730	1800	Australia, Radio	17750as		
1730	1800	Bulgaria, Radio	9400eu	11900eu	
1730	1800	s Germany, Voice of Hope		9860me	
1730	1800	Guam, AWR/KSDA	9385as	12015as	
1730	1800	Malta, VO Mediterranean		9850eu	
1730	1800	Netherlands, Radio	6020af	7120af	11655af
1730	1800	Philippines, Radio Pilipinas		11720me	15190me
		17720me			
1730	1800	s Russia, Bible Voice BC	15775me		
1730	1800	Slovakia, R Slovakia Intl	7345eu	5915eu	6055eu
1730	1800	Swaziland, TWR	3200af	9500af	
1730	1800	Sweden, Radio	6065va		
1730	1800	s Sweden, Radio	13580va		
1730	1800	Switzerland, Swiss R Intl	15555va	9755va	13790af
1730	1800	mtwhf USA, Voice of America	15730af	17895af	
1730	1800	Vatican City, Vatican Radio	17515af	13765af	15570af
1735	1745	vl/th Paraguay, Radio Nacional		9739sa	
1745	1800	Bangladesh, Bangla Betar		7185eu	9550eu
		15520eu			
1745	1800	India, All India Radio	7410eu	9445af	9950eu
		11620eu 11925af 13605af		15155af	17670af
1751	1800	New Zealand, Radio NZ Intl		11725pa	

## 1800 UTC - 2PM E / 1PM C / 11AM P

1800	1815	Russia, Bible Voice BC	7435me		
1800	1815	as Russia, Bible Voice BC	5880eu		
1800	1827	Czech Rep, Radio Prague Intl	5930va	7315va	
1800	1827	Vietnam, Voice of	5955eu	7145eu	9730eu
1800	1830	Azerbaijan, Voice of	6110eu	9155eu	
1800	1830	s Egypt, Radio Cairo	15255af		
1800	1830	Germnay, Universal Life		11840af	
1800	1830	Netherlands, Radio	6020af	7120af	11655af
1800	1830	South Africa, Channel Africa		17870af	
1800	1830	UK, BBC World Service		5975as	9510as
1800	1830	UK, RTE Radio	15585me		
1800	1850	New Zealand, Radio NZ Intl		11725pa	
1800	1900	Anguilla, Caribbean Beacon		11775am	
1800	1900	mtwhf Argentina, RAE	9690eu		
1800	1900	Australia, Radio	5995pa	6080pa	7240va
		9475as 9580va 9710pa	9815pa	11880va	
		12080va 15515va 17750as	21725pa	21820as	
1800	1900	Australia, Voice International	11680as		
1800	1900	Bangladesh, Bangla Betar	7185eu	9550eu	
		15520eu			
1800	1900	Canada, CBC Northern Service	9625do		
1800	1900	Canada, CFRX Toronto ON	6070do		
1800	1900	Canada, CFPV Calgary AB	6030do		
1800	1900	Canada, CKZN St John's NF	6160do		
1800	1900	Canada, CKZU Vancouver BC	6160do		
1800	1900	Costa Rica, R for Peace Intl	7455am	15040am	
1800	1900	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa 11870am	13750na	17645as	
1800	1900	Germany, Deutsche Welle	6140eu		
1800	1900	Germnay, R Africa Intl	13820va	15715va	
1800	1900	India, All India Radio	7410eu	9445af	9950eu
		11620eu 11925af 13605af		15155af	17670af
1800	1900	as/vl Italy, IRRS	13840va		
1800	1900	Kuwait, Radio	11990as		
1800	1900	s Latvia, Laser Radio	5935eu		
1800	1900	Liberia, ELWA	4760do		
1800	1900	Liberia, R Liberia Intl	5100do		
1800	1900	Libya, Voice of Africa	15205af	15660af	17635af
		17695af			
1800	1900	Philippines, Radio Pilipinas		11720me	15190me
		17720me			
1800	1900	Poland, Radio Polonia	5995eu	7285eu	
1800	1900	Russia, University Network	9890as		
1800	1900	Russia, Voice of Russia	7290eu	7335af	7340eu
		9590as 9830af 11510af			
1800	1900	as Russia, Voice of Russia	5950eu	6175eu	
1800	1900	s South Africa, Radio League	3215af		
1800	1900	South Africa, Radio Veritas	3230af		
1800	1900	Sri Lanka, SLBC	4940as		
1800	1900	Swaziland, TWR	3200af	9500af	
1800	1900	Taiwan, R Taipei Intl	3955eu		
1800	1900	UK, BBC World Service	3255af	6190af	
		6195eu 7120af 9410eu	12095eu	15310me	
		15400af 15420af 17830af	21470af		
1800	1900	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb 6350usb	6458usb	10320usb	
		12579usb 12689usb	13362usb		



# Shortwave Guide



1800	1900	USA, KAIJ Dallas TX	13815va		
1800	1900	USA, KTBN Salt Lk City UT	15590na		
1800	1900	USA, Voice of America	9760va	9850af	
		11975af 15410af	15580af		
1800	1900	USA, WBCQ Kennebunk, ME	17495na		
1800	1900	USA, WEWN Birmingham AL	13615na		
1800	1900	USA, WHRA Greenbush ME	17650va		
1800	1900	USA, WHRI Noblesville IN	9495va	13760na	
1800	1900	USA, WINB Red Lion PA	13570am		
1800	1900	USA, WJIE Louisville KY	7490am	13595am	
1800	1900	USA, WMLK Bethel PA	9465eu		
1800	1900	USA, WRMI Miami FL	15725na		
1800	1900	USA, WRNO New Orleans LA	7395am		
1800	1900	USA, WSHB Cypress Creek SC	18910af		
1800	1900	USA, WTJC Newport NC	9370na		
1800	1900	USA, WWCR Nashville TN	9475na	12160na	
		13845na 15825na			
1800	1900	USA, WWRB Manchester TN	9320na	12172na	
1800	1900	USA, WYFR Okeechobee FL	18980eu		
1800	1900	Yemen, Rep of Yemen Radio	9780me		
1800	1900	Zimbabwe, SWR Africa	6145do		
1815	1845	Russia, Bible Voice BC	7435me		
1815	1900	Russia, Bible Voice BC	5880eu		
1830	1845	UK, United Nations Radio	15585me	17565af	
1830	1855	Belgium, Radio Vlaanderen Intl	7465as	13650eu	
		13685eu			
1830	1900	Georgia, Georgian Radio	11910eu		
1830	1900	Netherlands, Radio	6020af	9895af	
		11655af 13700af	17605af		
1830	1900	South Africa, AWR	5960af		
1830	1900	South Africa, AWR	11985af		
1830	1900	Turkey, Voice of	9785eu		
1830	1900	UK, BBC World Service	6005af	9630af	
1830	1900	UK, RTE Radio	13640na		
1845	1900	Russia, Bible Voice BC	7435me		
1845	1900	Russia, Bible Voice BC	7435eu		
1851	1900	New Zealand, Radio NZ Intl	15160pa		

## 1900 UTC - 3PM E / 2PM C / 12PM P

1900	1920	Philippines, Radio Pilipinas	11720me	15190me	
		17720me			
1900	1927	Vietnam, Voice of	7145eu	9730eu	
1900	1928	Hungary, Radio Budapest	3975eu	6025eu	
		11720eu			
1900	1930	Germany, Universal Life	9470me		
1900	1930	Greece, Voice of	7475eu	17705na	
1900	1930	Israel, Kol Israel	11605va	15640af	
		17545va			
1900	1930	Russia, Bible Voice BC	9470na		
1900	1930	Turkey, Voice of	9785eu		
1900	1945	India, All India Radio	7410eu		
		11925af 13605af	15075af		
1900	1945	USA, WYFR Okeechobee FL	15115eu	18930eu	
1900	1956	China, China Radio Intl	9440af	9585af	
1900	1956	North Korea, Voice of 4405as	7505eu	11335eu	
1900	2000	Anguilla, Caribbean Beacon	11775am		
1900	2000	Australia, Radio	6080pa	9475as	
		9500as 9580va	9815pa	11880va	12080va
		15240va 21820as			
1900	2000	Australia, Voice International	11680as		
1900	2000	Botswana, Radio	3356do	4820do	7255do
1900	2000	Canada, CBC Northern Service	9625do		
1900	2000	Canada, CFRX Toronto ON	6070do		
1900	2000	Canada, CFVP Calgary AB	6030do		
1900	2000	Canada, CKZN St John's NF	6160do		
1900	2000	Canada, CKZU Vancouver BC	6160do		
1900	2000	Costa Rica, R for Peace Intl	7455am	15040am	
1900	2000	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa	11870am	13750na	17645as
1900	2000	Eqt Guinea, Radio Africa	15185af		
1900	2000	Germany, Deutsche Welle	6180af	7225af	
		11965af 13590af	15390af		
1900	2000	Ghana, Ghana BC Corp	3366do	4915do	
1900	2000	Italy, IRRS 5780va			
1900	2000	Kuwait, Radio	11990as		
1900	2000	Latvia, Laser Radio	5935eu		
1900	2000	Liberia, ELWA	4760do		
1900	2000	Liberia, R Liberia Intl	5100do		
1900	2000	Libya, Voice of Africa	15205af	15315af	
1900	2000	Malaysia, Radio	7295do		
1900	2000	Namibia, NBC	3270af	3290af	
1900	2000	Netherlands, Radio	6020af	7120af	9895af
		11655af 13700af	17605af		
1900	2000	New Zealand, Radio NZ Intl	15160pa		
1900	2000	Nigeria, Radio/Enugu	6025do		
1900	2000	Nigeria, Radio/Ibadan	6050do		
1900	2000	Nigeria, Radio/Kaduna	4770do	6090do	
		9570do			
1900	2000	Nigeria, Radio/Lagos	3326do	4990al	
1900	2000	Nigeria, Voice of	9690af	15120af	
1900	2000	Papua New Guinea, NBC	4890do	9675al	
1900	2000	Russia, Bible Voice BC	5880me		

1900	2000	s	Russia, Bible Voice BC	7435me	
1900	2000		Russia, University Network	9890as	
1900	2000		Russia, Voice of Russia	5950eu	6175eu 6235eu
			7290eu 7335af	7340eu	7360eu 7440af
			9875af 11510af		
1900	2000		South Korea, R Korea Intl	5975va	7275va
1900	2000		Sri Lanka, SLBC	4940as	
1900	2000	a	Sri Lanka, SLBC	6010eu	
1900	2000		Swaziland, TWR	3200af	
1900	2000		Thailand, Radio	7155eu	
1900	2000		Uganda, Radio	4976do	5026do 7196do
1900	2000		UK, BBC World Service	6190af 6195eu 7120af	3255af 6005af
			12095af 15310me 15400af		9410eu 9630af
1900	2000		USA, Armed Forces Network	3903usb	4278usb
			4319usb 4993usb 6350usb		6458usb 10320usb
			12579usb		13362usb
1900	2000		USA, KAIJ Dallas TX	13815va	
1900	2000		USA, KJES Vado NM	15385au	
1900	2000		USA, KTBN Salt Lk City UT	15590na	
1900	2000		USA, Voice of America	4950af	6160va 7260va
			9525va 9680va	9760va	9770va 9850af
			11770va 11975af	13635va	13670af 15180va
			15410af 15445af	15580af	17830af
1900	2000	mtwhf	USA, Voice of America	9550va	9840va 11780va
			11970va 12015va	15235va	
1900	2000		USA, WBCQ Kennebunk, ME	17495na	
1900	2000	s	USA, WBCQ Kennebunk, ME	7415na	
1900	2000	mtwhf	USA, WBCQ Kennebunk, ME	9330na	
1900	2000		USA, WEWN Birmingham AL	13615na	17595eu
1900	2000		USA, WHRA Greenbush ME	17650va	
1900	2000		USA, WHRI Noblesville IN	9495va	13760na
1900	2000		USA, WINB Red Lion PA	13570am	
1900	2000		USA, WJIE Louisville KY	7490am	13595am
1900	2000		USA, WMLK Bethel PA	9495eu	15265eu
1900	2000		USA, WRMI Miami FL	15725na	
1900	2000		USA, WRNO New Orleans LA	7395am	
1900	2000	th	USA, WSHB Cypress Creek SC	15665eu	18910af
1900	2000	mwfa	USA, WSHB Cypress Creek SC	18910af	
1900	2000		USA, WTJC Newport NC	9370na	
1900	2000		USA, WWCR Nashville TN	9475na	12160na
			13845na 15825na		
1900	2000		USA, WWRB Manchester TN	9320na	12172na
1900	2000		USA, WYFR Okeechobee FL	3230af	
1900	2000	vl	Vanuatu, Radio	3945al	7260do
1900	2000		Zambia, Christian Voice	4965do	
1915	1930		UK, BBC World Service	17885af	
1930	2000	vl/ mtwh	Belarus, Radio Belarus Intl	7105eu	7210eu
1930	2000		Georgia, Georgian Radio	11760eu	
1930	2000		Greece, Voice of	7475eu	
1930	2000	s	Greece, Voice of	9420eu	17705na
1930	2000		Iran, VOIRI 6110eu	7215eu	7320eu 11695af
			15140af		
1930	2000		Serbia Montenegro, R Yugoslavia	6100eu	
1930	2000		Slovakia, R Slovakia Intl	5915eu	6055eu
			7345eu		
1930	2000	mtwhf/vl	Solomon Islands, SIBC	5020do	9545do
1930	2000		Sweden, Radio	6065va	
1930	2000		Switzerland, Swiss R Intl	9755va	13660va
			15485va 17660va		
1935	1955		Italy, RAI Intl	9745eu	
1940	1945		Turkmenistan, Turkmen Radio	4930as	
1945	2000	mtwhfa	Albania, Radio Tirana Intl	7210na	9510na

## 2000 UTC - 4PM E / 3PM C / 1PM P

2000	2015	s/vl	Solomon Islands, SIBC	5020do	9545do
2000	2025		Netherlands, Radio	6020af	7120af 9895af
			11655af 13700af	17605af	21590af
2000	2027		Iran, VOIRI 6110eu	7215eu	7320eu 11695af
			15140af		
2000	2030	as/vl	Italy, IRRS 5780va		
2000	2030		Libya, Voice of Africa	15315af	
2000	2030		Mongolia, Voice of	12015eu	
2000	2030	mtwhf/vl	Solomon Islands, SIBC	5020do	9545do
2000	2030		Switzerland, Swiss R Intl	9755va	13660va
			15485va 17660va		
2000	2030		Vatican City, Vatican Radio	7365af	9660af
			11625af		
2000	2045		Iraq, Radio Iraq Intl	11787irr	
2000	2056		China, China Radio Intl	5965eu	9440eu
			9840eu 11640af	11790eu	13630af
2000	2100		Algeria, Radio Algiers Intl	11715eu	15160eu
2000	2100		Anguilla, Caribbean Beacon	11775am	
2000	2100		Australia, Radio	7240va	9475as 9500as
			9580va 9815pa	11880va	12080va 15240va
			21820as		
2000	2100		Australia, Voice International	11680as	
2000	2100	vl	Botswana, Radio	3356do	4820do 7255do
2000	2100		Canada, CBC Northern Service	9625do	
2000	2100		Canada, CFRX Toronto ON	6070do	
2000	2100		Canada, CFVP Calgary AB	6030do	
2000	2100		Canada, CKZN St John's NF	6160do	

# Shortwave Guide



2000	2100	Canada, CKZU Vancouver BC	6160do		2100	2130	Libya, Voice of Africa	11635af	
2000	2100	Costa Rica, R for Peace Intl	7455am	15040am	2100	2130	Nigeria, Radio/Ibadan	6050do	
2000	2100	Costa Rica, University Network	5030am	6150am	2100	2130	South Korea, R Korea Intl	3955eu	
		7375am 9725sa	11870am	13750na	2100	2130	Turkey, Voice of	9525au	
2000	2100	Ecuador, HCJB	15185eu		2100	2156	North Korea, Voice of	4405as	7505eu 11335eu
2000	2100	Egt Guinea, Radio Africa	15185af		2100	2159	Canada, Radio Canada Intl	5850va	5995va
2000	2100	Ethiopia, Radio	7520do				7235va 7425va	9770va	9805va 13650va
2000	2100	Germany, Deutsche Welle	9780af	15205af	2100	2200	Anguilla, Caribbean Beacon	11775am	
		17810af			2100	2200	Australia, Radio	5995pa	6020pa 7240va
2000	2100	Ghana, Ghana BC Corp	3366do	4915do			9500as 9580va	9660pa	11880va 12080va
2000	2100	Guam, AWR/KSDA	11750as	11980as			17715va 21740va	21820as	
2000	2100	Indonesia, Voice of	9525eu		2100	2200	Austria, AWR	9660af	
2000	2100	Kuwait, Radio	11990as		2100	2200	Botswana, Radio	3356do	4820do 7255do
2000	2100	Latvia, Laser Radio	5935eu		2100	2200	Bulgaria, Radio	5800eu	7500eu
2000	2100	Liberia, ELWA	4760do		2100	2200	Canada, CBC Northern Service	9625do	
2000	2100	Liberia, R Liberia Intl	5100do		2100	2200	Canada, CFRX Toronto ON	6070do	
2000	2100	Libya, Voice of Africa	11635af	15205af	2100	2200	Canada, CFPV Calgary AB	6030do	
2000	2100	Malaysia, Radio	7295do		2100	2200	Canada, CKZN St John's NF	6160do	
2000	2100	Malta, VO Mediterranean	7445eu		2100	2200	Canada, CKZU Vancouver BC	6160do	
2000	2100	Namibia, NBC	3270af	3290af	2100	2200	Costa Rica, R for Peace Intl	7455am	15040am
2000	2100	New Zealand, Radio NZ Intl	15160pa		2100	2200	Costa Rica, University Network	5030am	6150am
2000	2100	Nigeria, Radio/Enugu	6025do				7375am 9725sa	11870am	13750na 17645as
2000	2100	Nigeria, Radio/Ibadan	6050do		2100	2200	Ecuador, HCJB	15185eu	
2000	2100	Nigeria, Radio/Kaduna	9770do	6090do	2100	2200	Egypt, Radio Cairo	15375af	
		9570do			2100	2200	Egt Guinea, Radio Africa	15185af	
2000	2100	Nigeria, Radio/Lagos	3326do	4990al	2100	2200	Germany, Deutsche Welle	9440af	11865af
2000	2100	Nigeria, Voice of	9690af	15120af			15205af		
2000	2100	Russia, University Network	9890as		2100	2200	Ghana, Ghana BC Corp	3366do	4915do
2000	2100	Russia, Voice of Russia	5950eu	6175eu 6235eu	2100	2200	India, All India Radio	7410eu	9445eu 9575au
		7290eu 7340eu	7390eu				9910au 9950eu	11620va	11715au
2000	2100	Slovakia, AWR	5955as		2100	2200	Italy, IRRS	5780va	
2000	2100	South Africa, AWR	15295af		2100	2200	Japan, Radio	6035	oc 6055 oc
2000	2100	Spain, R Exterior Espana	5959af	9680eu			6090eu 6180eu	11830eu	11850 oc
2000	2100	Uganda, Radio	4976do	5026do 7196do			11855af 11920	oc	17825na 17860oc
2000	2100	UK, BBC World Service	3255af	6005af			21670na		
		6190af 6195eu	7120af	9410eu 9630af	2100	2200	Liberia, ELWA	4760do	
		12095af 15400af	17830af		2100	2200	Liberia, R Liberia Intl	5100do	
2000	2100	USA, Armed Forces Network	3903usb	4278usb	2100	2200	Malaysia, Radio	7295do	
		4319usb 4993usb	6350usb	10320usb	2100	2200	Namibia, NBC	3270af	3290af
		12579usb	12689usb	13362usb	2100	2200	Nigeria, Radio/Enugu	6025do	
2000	2100	USA, KAJI Dallas TX	13815va		2100	2200	Nigeria, Radio/Kaduna	9570do	4770do 6090do
2000	2100	USA, KLTN Salt Lk City UT	15590na				9570do		
2000	2100	USA, Voice of America	4950af	6095va 9760va	2100	2200	Nigeria, Radio/Lagos	3326do	4990al
		9770va 9850af	11855af	11975af 13670af	2100	2200	Nigeria, Voice of	9690af	15120af
		15410af 15445af	15580af	17745af 17895af	2100	2200	Papua New Guinea, NBC	4890do	9675al
2000	2100	USA, WBCQ Kennebunk, ME	17495na		2100	2200	Romania, R Romania Intl	5995eu	7105eu
2000	2100	USA, WBCQ Kennebunk, ME	9330na				7215eu 9690eu		
2000	2100	USA, WEWN Birmingham AL	13615na	17595eu	2100	2200	Russia, University Network	9890as	
2000	2100	USA, WHRA Greenbush ME	17650va		2100	2200	Russia, Voice of Russia	5950eu	6175eu 6235eu
2000	2100	USA, WHRI Noblesville IN	5745va	9495va			7300eu 7340eu	7390eu	15735am
2000	2100	USA, WINB Red Lion PA	13570am		2100	2200	Solomon Islands, SIBC	5020do	9545do
2000	2100	USA, WJIE Louisville KY	7490am	13595am	2100	2200	Sri Lanka, SIBC	4940as	
2000	2100	USA, WMLK Bethel PA	9495eu	15265eu	2100	2200	Syria, Radio Damascus	12085eu	13610eu
2000	2100	USA, WRMI Miami FL	15725na		2100	2200	UK, BBC World Service	3255af	3915as
2000	2100	USA, WRNO New Orleans LA	7395am				5965as 5975am	6005af	6190af 6195va
2000	2100	USA, WTJC Newport NC	9370na				7120af 9410eu	11945as	12095sa 15400af
2000	2100	USA, WWCR Nashville TN	9475na	12160na			17830af		
		13845na 15825na			2100	2200	USA, Armed Forces Network	3903usb	4278usb
2000	2100	USA, WWRB Manchester TN	9320na	12172na			4319usb 4993usb	6350usb	6458usb 10320usb
2000	2100	USA, WYFR Okeechobee FL	3230af	17525sa			12579usb	12689usb	13362usb
2000	2100	Vanuatu, Radio	3945al		2100	2200	USA, KAJI Dallas TX	13815va	
2000	2100	Zambia, Christian Voice	4965do		2100	2200	USA, KLTN Salt Lk City UT	15590na	
2000	2100	USA, WSHB Cypress Creek SC	15665af		2100	2200	USA, Voice of America	6040va	6095va 9530va
2005	2100	Syria, Radio Damascus	12085eu	13610eu			9705va 9760va	9850af	11870va 11975af
2025	2045	Italy, RAI Intl	6185va	9670va 11880va			13670af 15185va	15410af	15580af 17740va
2030	2045	Thailand, Radio	9680eu				17895af 17820va		
2030	2055	Belgium, Radio Vlaanderen Intl	7465eu		2100	2200	USA, WBCQ Kennebunk, ME	7415na	9330na
2030	2057	Vietnam, Voice of	9730eu				17495na		
2030	2100	Belarus, Radio Belarus Intl	7105eu	7210eu	2100	2200	USA, WBCQ Kennebunk, ME	9330na	
2030	2100	Cuba, Radio Havana	13660usb	13750eu	2100	2200	USA, WEWN Birmingham AL	13615na	17595eu
2030	2100	Egypt, Radio Cairo	15375af		2100	2200	USA, WHRA Greenbush ME	17650va	
2030	2100	Poland, Radio Polonia	7165eu	7265eu	2100	2200	USA, WHRI Noblesville IN	5745va	9495va
2030	2100	Solomon Islands, SIBC	5020do		2100	2200	USA, WINB Red Lion PA	13570am	
2030	2100	Turkey, Voice of	9525va		2100	2200	USA, WJIE Louisville KY	7490am	13595am
2030	2100	UK, Wales Radio Intl	7325eu		2100	2200	USA, WMLK Bethel PA	15265eu	
2030	2100	USA, Voice of America	4950af		2100	2200	USA, WRMI Miami FL	15725na	
2030	2100	Uzbekistan, Radio Tashkent	5025eu	7105eu	2100	2200	USA, WRNO New Orleans LA	7395am	
		11905eu			2100	2200	USA, WSHB Cypress Creek SC	11650eu	
2040	2100	Armenia, Voice of	4810eu		2100	2200	USA, WSHB Cypress Creek SC	15665af	
2045	2100	India, All India Radio	7410eu	9445eu 9575au	2100	2200	USA, WTJC Newport NC	9370na	
		9910au 9950eu	11620va	11715au	2100	2200	USA, WWCR Nashville TN	9475na	12160na
2050	2100	Vatican City, Vatican Radio	4005eu	5890eu			13845na 15825na		
		7250eu			2100	2200	USA, WWRB Manchester TN	9320na	12172na
2050	2110	City, Vatican Radio	4005eu	5890eu 7250eu	2100	2200	USA, WYFR Okeechobee FL	15665eu	17575sa
							21455eu		
					2100	2200	Vanuatu, Radio	3945al	7260do
					2100	2200	Zambia, Christian Voice	4965do	
					2115	2130	UK, BBC World Service	11675am	15390am
					2115	2200	Egypt, Radio Cairo	9990eu	
					2130	2145	UK, BBC World Service	11720sa	
					2130	2156	China, China Radio Intl	5965eu	9840eu
							13630eu 13640eu		
2100	2130	Australia, ABC NT Alice Springs	2310do	4835irr	2130	2200	Australia, ABC NT Katherine	5025do	
					2130	2200	Australia, ABC NT Tennant Crk	4910do	

## 2100 UTC - 5PM E / 4PM C / 2PM P

2100	2127	Czech Rep, Radio Prague Intl	5930va	9430va
2100	2127	Vietnam, Voice of	7145eu	9730eu
2100	2128	Hungary, Radio Budapest	6025eu	11890af
2100	2130	China, China Radio Intl	5965eu	9840eu
		11640af 11790eu	13630af	
2100	2130	Cuba, Radio Havana	13660usb	13750eu



# Shortwave Guide



2130	2200	Australia, Radio	11660as		
2130	2200	Guam, AWR/KSDA	11980as		
2130	2200	Iran, VOIR9780au	11740au		
2130	2200	Sweden, Radio	6065va		
2130	2200	Uzbekistan, Radio Tashkent	5025eu	7105eu	
		11905eu			

## 2200 UTC - 6PM E / 5PM C / 3PM P

2200	2215	New Zealand, Radio NZ Intl	15160pa		
2200	2227	Iran, VOIR9780as	11740au		
2200	2228	Hungary, Radio Budapest	6025eu	11885af	
2200	2229	Canada, Radio Canada Intl	5850va	6045va	
		9770va 9805va			
2200	2230	India, All India Radio	7410eu	9445eu	9575au
		9910au 9950eu	11620va	11715au	
2200	2230	as/vl Italy, IRRS	5780va		
2200	2230	Serbia Montenegro, R Yugoslavia	6100eu		
2200	2230	mtwhf USA, Voice of America	9850af	11975af	13670af
		15580af			
2200	2245	Egypt, Radio Cairo	9990eu		
2200	2245	USA, WYFR Okeechobee FL	15565af		
2200	2256	China, China Radio Intl	7170eu		
2200	2300	Anguilla, Caribbean Beacon	6090am		
2200	2300	Australia, ABC NT Alice Springs	2310do	4835irr	
2200	2300	Australia, ABC NT Katherine	5025do		
2200	2300	Australia, ABC NT Tennant Crk	4910do		
2200	2300	Australia, Radio	5995pa	6020pa	9580va
		11650va 11660as	13620as	15230as	17715va
		17795va 21740va			
2200	2300	Canada, CBC Northern Service	9625do		
2200	2300	Canada, CFRX Toronto ON	6070do		
2200	2300	Canada, CFVP Calgary AB	6030do		
2200	2300	Canada, CKZN St John's NF	6160do		
2200	2300	Canada, CKZU Vancouver BC	6160do		
2200	2300	Costa Rica, R for Peace Intl	7455am	15040am	
2200	2300	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa	11870am	13750na	17645as
2200	2300	mtwhf Eqt Guinea, Radio Africa	15185af		
2200	2300	Germany, Deutsche Welle	9720as	15605as	
2200	2300	vl Ghana, Ghana BC Corp	3366do	4915do	
2200	2300	Guyana, Voice of	3290do	5950do	
2200	2300	Liberia, R Liberia Intl	5100do		
2200	2300	Malaysia, Radio	7295do		
2200	2300	Mexico, Radio Mexico Intl	9705am	11770am	
2200	2300	Namibia, NBC	3270af		
2200	2300	Nigeria, Radio/Enugu	6025do		
2200	2300	Nigeria, Radio/Kaduna	9570do	4770do	6090do
2200	2300	Nigeria, Radio/Lagos	3326do		
2200	2300	Nigeria, Voice of	9690af		
2200	2300	Russia, University Network	9890as		
2200	2300	vl Solomon Islands, SIBC	5020do	9545do	
2200	2300	as Spain, R Exterior Espana	9595af	9680eu	
2200	2300	Sri Lanka, SLBC	4940as		
2200	2300	Taiwan, R Taipei Intl	9355eu		
2200	2300	Turkey, Voice of	9830va		
2200	2300	UK, BBC World Service	11960va		
		6195as 7105as 7120af	5965as	5975am	
		12095sa 15400af 17830af	9740as	11955as	
2200	2300	Ukraine, R Ukraine Intl	5905eu	6020eu	
2200	2300	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb	6350usb	10320usb	
		12579usb	12689usb	13362usb	
2200	2300	USA, KALJ Dallas TX	13815va		
2200	2300	USA, KTNB Salt Lk City UT	15590na		
2200	2300	USA, KWHR Naalehu HI	17510as		
2200	2300	USA, Voice of America	7215va	9770va	
		11760va 15185va	15290va	15305va	17740va
		17820va			
2200	2300	USA, WBCQ Kennebunk, ME	7415na	9330na	
		17495na			
2200	2300	USA, WEWN Birmingham AL	9975na	17595eu	
2200	2300	USA, WHRA Greenbush ME	7580va	17650va	
2200	2300	USA, WHRI Noblesville IN	5745va	9495va	
2200	2300	USA, WINB Red Lion PA	13570am		
2200	2300	USA, WJIE Louisville KY	7490am	13595am	
2200	2300	USA, WRMI Miami FL	15725na		
2200	2300	USA, WRNO New Orleans LA	7395am		
2200	2300	USA, WSHB Cypress Creek SC	7510eu		
2200	2300	USA, WSHB Cypress Creek SC	15285sa		
2200	2300	USA, WTJC Newport NC	9370na		
2200	2300	USA, WWCN Nashville TN	7465na	9475na	
		12160na 13845na			
2200	2300	USA, WWRB Manchester TN	9320na	12172na	
2200	2300	USA, WYFR Okeechobee FL	11740na		
2200	2300	Vanuatu, Radio	3945al		
2200	2300	Zambia, Christian Voice	4965do		
2205	2230	Italy, RAI Intl	11895va		
2216	2300	New Zealand, Radio NZ Intl	17675pa		

## 2300 UTC - 7PM E / 6PM C / 4PM P

2230	2255	Belgium, Radio Vlaanderen Intl	13700na		
2230	2257	Czech Rep, Radio Prague Intl	7345va	9435va	
2230	2300	mtwhf Albania, Radio Tirana Intl	7130eu	9540eu	
2230	2300	Australia, Radio	9475as		
2230	2300	Cuba, Radio Havana	6195am		
2245	2300	India, All India Radio	9705as	9950as	11620as
		13605as			
2300	0000	Anguilla, Caribbean Beacon	6090am		
2300	0000	Australia, ABC NT Alice Springs	2310do	4835irr	
2300	0000	Australia, ABC NT Katherine	5025do		
2300	0000	Australia, ABC NT Tennant Crk	4910do		
2300	0000	Australia, Radio	9475as	9580va	9660pa
		11650pa 11660as	12080va	13620as	15230as
		17715va			
2300	0000	Bulgaria, Radio	9400na	11900na	
2300	0000	Canada, CBC Northern Service	9625do		
2300	0000	Canada, CFRX Toronto ON	6070do		
2300	0000	Canada, CFVP Calgary AB	6030do		
2300	0000	Canada, CKZN St John's NF	6160do		
2300	0000	Canada, CKZU Vancouver BC	6160do		
2300	0000	China, China Radio Intl	5990na	13680na	
2300	0000	Costa Rica, R for Peace Intl	7455am	15040am	
2300	0000	Costa Rica, University Network	5030am	6150am	
		7375am 9725sa	11870am	13750na	17645as
2300	0000	Egypt, Radio Cairo	11725na		
2300	0000	Germany, Deutsche Welle	9890as	17860as	
2300	0000	vl Ghana, Ghana BC Corp	3366do	4915do	
2300	0000	Guyana, Voice of	3290do	5950do	
2300	0000	India, All India Radio	9705as	9950as	11620as
		13605as			
2300	0000	Liberia, R Liberia Intl	5100do		
2300	0000	Malaysia, Radio	7295do		
2300	0000	Mexico, Radio Mexico Intl	9705am	11770am	
2300	0000	Namibia, NBC	3270af		
2300	0000	New Zealand, Radio NZ Intl	17675pa		
2300	0000	Romania, R Romania Intl	7195eu	9510na	
		9570eu 11940na			
2300	0000	Russia, University Network	9890as		
2300	0000	Singapore, SBC Radio One	6150do		
2300	0000	Sri Lanka, SLBC	4940as		
2300	0000	UAE, Gospel For Asia	6145as		
2300	0000	UK, BBC World Service	3915as	5965as	
		5975am 6195as	7120af	9580as	9740as
		11955as 11955as	12095sa	15280as	
2300	0000	Ukraine, R Ukraine Intl	5905eu	12040na	
2300	0000	USA, Armed Forces Network	3903usb	4278usb	
		4319usb 4993usb	6350usb	6458usb	10320usb
		12579usb	12689usb	13362usb	
2300	0000	USA, KALJ Dallas TX	13815va		
2300	0000	USA, KTNB Salt Lk City UT	15590na		
2300	0000	USA, KWHR Naalehu HI	17510as		
2300	0000	USA, WBCQ Kennebunk, ME	7415na	9335na	
		17495na			
2300	0000	USA, WEWN Birmingham AL	9975na	17595eu	
2300	0000	USA, WHRA Greenbush ME	7580eu		
2300	0000	USA, WHRI Noblesville IN	5745va	9495va	
2300	0000	USA, WINB Red Lion PA	12160am		
2300	0000	USA, WJIE Louisville KY	7490am	13595am	
2300	0000	USA, WRMI Miami FL	15725na		
2300	0000	USA, WRMI Miami FL	15725na		
2300	0000	USA, WRNO New Orleans LA	7355am		
2300	0000	USA, WSHB Cypress Creek SC	7510af		
2300	0000	USA, WTJC Newport NC	9370na		
2300	0000	USA, WWCN Nashville TN	5070na	7465na	
		9475na 13845na			
2300	0000	USA, WWRB Manchester TN	5050na	5085na	
		6890na			
2300	0000	USA, WYFR Okeechobee FL	5985sa	11855sa	
		15170sa 15400sa			
2300	0000	Vanuatu, Radio	3945al	7260do	
2300	0000	Zambia, Christian Voice	4965do		
2300	2329	Canada, Radio Canada Intl	5960am	9590am	
		11865am			
2300	2330	Cuba, Radio Havana	9550am		
2300	2330	Nigeria, Radio/Enugu	6025do		
2300	2330	Nigeria, Radio/Kaduna	4770do	6090do	
2300	2330	Nigeria, Radio/Lagos	3326do	4990af	
2300	2330	Solomon Islands, SIBC	5020do	9545do	
2300	2330	USA, Voice of America	7190va	7200va	9545va
		11925va 13755va			
2300	2345	USA, WYFR Okeechobee FL	11740na		
2320	2330	Kyrgyz, Kyrgyz Radio	4010as	4795as	
2330	0000	Australia, Radio	11695as	15415as	
2330	0000	Canada, Radio Canada Intl	5960na	9590na	
2330	0000	Lithuania, R Vilnius	9875eu		
2330	0000	Netherlands, Radio	6165na	9845na	
2330	0000	Switzerland, Swiss R Intl	9885sa	11660sa	
2330	0000	USA, Voice of America	7190va	7200va	7225va
		7260va 9545va	11805va	11925va	13725va
		13775va 15205va			
2330	2356	China, China Radio Intl	5990na	13680na	
2330	2357	Czech Rep, Radio Prague Intl	9745na	21455usb	
2330	2357	Vietnam, Voice of	9840as	12020as	



## Notes:

1. **BBCWS stream abbreviations:** (am)=Americas; (eas)=East Asia. Due to space limitations, listings for the BBCWS this month also are limited to those recommended by the station to listeners in North America. Other than the Americas stream (am), the East Asia (eas) stream is recommended to listeners in western North America. **Be advised that regularly scheduled BBCWS programming is subject to preemption whenever the BBC determines that coverage of breaking news warrants it.**
2. As of March 30, **Deutsche Welle** has ended direct shortwave service to North America and Australasia. For a complete listing of remaining DW broadcasts and programs to other regions, please refer to April's Shortwave Guide "Program Highlights" column and this month's frequency listings.

## 0000 UTC/ 8pm E/5pm P - Page 43 Freqs

## NEWSCASTS (\*extended)

0000	BBCWS(am)	D	News
	HCJB Ecuador	T-A	Latin American & World News
	R. Australia	D	World News
	R. Japan	D	World News
	R. New Zealand Int.	S/A	News
		M-F	Midday Report*
	R. Prague	D	News
	R. Ukraine Int.	D	News
	Spanish Foreign R.	T-A	Ibero-American News*
	VOA News Now	T-A	News*

## CURRENT AFFAIRS MAGAZINES/FEATURES

0006	BBCWS(am)	F	Assignment (in-depth report)
0010	R. Australia	H	Background Briefing (documentaries)
0015	R. Japan	T-A	44 Minutes
	VOA News Now	T-A	Focus (one story in depth)

## BUSINESS/ECONOMICS (also in NEWSCASTS &amp; Current Affairs)

0000	R. Netherlands	A	A Good Life (development issues)
0010	R. Prague	F	Economic Report
0030	R. Netherlands	W	A Good Life
0032	BBCWS(am)	F	The Music Biz

## SCIENCE/TECHNOLOGY (incl. Health &amp; Environment)

0000	R. Netherlands	T	The Research File
0010	R. Australia	T	The Science Show
0030	R. Netherlands	F	The Research File
0034	R. Australia	S	Ockham's Razor

## ARTS &amp; CULTURE

0000	Spanish Foreign R.	M	Window on Spain
0006	BBCWS(am)	S	The Ticket (arts/performance)
		W	Masterpiece (cultural ideas)
0010	R. Australia	M	Away! (Aboriginal)
	R. Prague	A	The Arts
0015	Spanish Foreign R.	S/M	History or cultural series
0020	R. Prague	M	Readings from Czech Literature
		A	Away from Politics (poetry)
0030	R. Ukraine Int.	M	Roots
0035	Spanish Foreign R.	H	Entremeses (food & travel)

## LOCAL LIVES &amp; VIEWS

0000	R. Netherlands	M	Dutch Horizons
0005	R. Prague	S	Insight Central Europe
		M	Letter from Prague
		T-A	Newsview
	R. Ukraine Int.	T-A	Ukraine Today
0010	HCJB Ecuador	T-A	Studio 9
	R. Australia	W	The National Interest
		F	Hindsight (social history)
		A	Australian Express
	R. Japan	M	Weekend Square
	R. Prague	T	One on One (interview)
		W	Witness (oral history)
0012	R. New Zealand Int.	S	The Week in Parliament
		A	Focus on Politics

0020	R. Prague	W	Talking Point
		H	Czechs in History [or] Spotlight (places)
0030	R. Netherlands	T	EuroQuest (Europe in context)
		H	Dutch Horizons
0033	R. New Zealand Int.	S	Spectrum
	VOA News Now	T-A	Coast to Coast

## INFORMATIONAL FEATURES

0000	R. for Peace Int.	W	RadioNation
	R. Netherlands	H	Documentary
		F	Soundscapes
			Fountain (soundscapes)
0006	BBCWS(am)	M	Everywoman (magazine)
		T	Spinning to Win (political spin)
		H	Documentaries
0030	HCJB Ecuador	F	Book & Spade (archaeology)
	R. Netherlands	S	Amsterdam Forum (discussion)
		M	Sound Fountain
		A	Documentary
0047	Spanish Foreign R.	T-A	Spanish Language Course

## MUSIC

0000	R. Netherlands	S/W	Music 52-15 (world/folk)
	WBCQ Maine	S	A Different Kind of Oldies Show
0110	R. Australia	S	Go Zone (pop)
	R. Ukraine Int.	M	Music from Ukraine
0030	HCJB Ecuador	T	Inspirational Classics
		H	Walkin' in the Sunshine (country)
		A	Musica del Ecuador (Andean)
0032	BBCWS(am)	T	The Music Feature
		W	Top of the Pops (UK top 20)
		H	Charlie Gillett (world music)
		A	John Peel (eclectic)
0033	R. New Zealand Int.	A	The Sampler (new CDs)
0045	HCJB Ecuador	W	Wonderful Words of Life (hymns)

## ENTERTAINMENT

0000	WBCQ Maine	M	Radio New York International
		W	Good Morning Maine
		A	Allan Weiner Worldwide
0032	BBCWS(am)	M	Westway Omnibus (drama serial)

## SWL, MEDIA &amp; COMMUNICATIONS

0000	HCJB Ecuador	S	DX Partyline
	R. for Peace Int.	S	World of Radio
0015	R. Ukraine Int.	S	Whole World on Radio Dial
0030	R. for Peace Int.	M	World of Radio
		W	Counterspin
0035	Spanish Foreign R.	R.	S/T Radio Waves
0045	R. Bulgaria	A	R. Bulgaria Calling

## LISTENER CONTACT/INTERACTIVE

0000	HCJB Ecuador	M	Musical Mailbag
0010	R. Japan	S	Hello from Tokyo
	R. Prague	M	Mailbox
0030	HCJB Ecuador	S	Saludos Amigos
	R. for Peace Int.	S	RFPI Mailbag
	R. Ukraine Int.	S	Hello from Kiev
0035	Spanish Foreign R.	A	Radio Club

## SPORT

0006	BBCWS(am)	A	Sports International (magazine)
0023	VOA News Now	T-A	Sports

## 0100 UTC/ 9pm E/6pm P - Page 43 Freqs

## NEWSCASTS (\*extended)

0100	BBCWS(am)	D	News
	China R. Int.	D	News & Reports*
	R. Australia	D	News
	R. Budapest	D	News
	R. Canada Int.	D	News
	R. Habana Cuba	D	News
	R. Netherlands	S/M	News
	R. New Zealand Int.	D	News
	R. Prague	D	News
	VOA News Now	T-A	News & Reports*
	Voice of Russia	D	News
	Voice of Vietnam	D	News
0130	VOA Spec. Eng.	T-A	News

## CURRENT AFFAIRS

0100	R. Netherlands	T-A	Newsline
0105	R. Australia	S	Correspondents' Report
		A	Asia Pacific Weekend Edition
	R. Netherlands	M	Wide Angle (one topic focus)
0110	China R. Int.	S	Report on Developing Countries
	R. Australia	M-F	Asia Pacific
	R. Habana Cuba	M	Weekly Review
0111	Voice of Russia	S	News and Views
		M	Sunday Panorama
		T-A	Commonwealth Update
0115	R. Habana Cuba	T-S	Viewpoint
0130	R. Austria Int.	T-A	Report from Austria
0133	VOA News Now	A	VOA News Review
0135	R. Canada Int.	S/A	Canada in the World
		T	Media Zone
0140	R. Habana Cuba	A	Weekly Review
	VOA Spec. Eng.	A	In the News
0145	VOA News Now	T-F	Dateline

## BUSINESS/ECONOMICS (also in NEWSCASTS &amp; Current Affairs)

0105	R. Budapest	M	Europe Unlimited (trade-monthly)
		S	Business Sense
0106	R. Canada Int.	S	A Your Money
0110	R. New Zealand Int.	F	Economic Report
0115	R. Prague	F	Vietnam Economy
0130	China R. Int.	T	Biz China
0133	VOA News Now	T-F	Business News
0135	R. Canada Int.	F	Business Sense
0140	VOA Spec. Eng.	T	Development Report

## SCIENCE/TECHNOLOGY (incl. Health &amp; Environment)

0106	BBCWS(am)	T	Health Matters
		W	Go Digital
		H	Discovery (research)
		F	One Planet (ecology)
		A	Science in Action (magazine)
0115	China R. Int.	A	Cutting Edge
0130	R. Australia	M	The Health Report
0140	VOA Spec. Eng.	W	Agriculture Today
		H	Health Report
		A	Environment Report
0145	VOA Spec. Eng.	W	Science in the News
		H	Explorations
0150	R. Habana Cuba	M	Breakthrough

## ARTS &amp; CULTURE

0105	R. Budapest	M	Spotlight (monthly)
0106	R. New Zealand Int.	S	At the Movies
0110	R. Prague	A	The Arts
0115	Voice of Vietnam	W	Culture & Society
0120	China R. Int.	S	In the Spotlight
	R. Prague	M	Readings from Czech Literature
		A	Away from Politics (poetry)
	Voice of Vietnam	A	Literature & Arts
0130	R. Australia	A	The Arts
	R. New Zealand Int.	S	Bookmarks
0132	BBCWS(am)	F	The Word (books, writers & readers)
0135	R. Canada Int.	M/H	Spotlight
0145	VOA Spec. Eng.	A	American Stories
		H	The Making of a Nation

## LOCAL LIVES &amp; VIEWS

0105	R. Budapest	S	Insight Central Europe
		M	Heading for Hungary (monthly)
		T-A	Hungary Today
	R. Canada Int.	T-A	Canada Today
	R. Netherlands	S	Europe Unzipped
	R. Prague	S	Magazine (local color)
		M	Letter from Prague
		T-A	Newsview
	Voice of Vietnam	D	Current Affairs
0110	R. Prague	T	One on One (interview)
		W	Witness (oral history)
0115	Voice of Vietnam	T	Vietnam: Land and People
		A	Rural Vietnam
0120	R. Prague	W	Talking Point
		H	Czechs in History [or] Spotlight (places)
		M	Russia: People & Events
0124	Voice of Russia	M	People in the Know
0130	China R. Int.	M	China Horizons
		W	Voices from Other Lands
		H	Life in China
		F	Studio 9 Weekend
	HCJB Ecuador	S	Insight Central Europe
	R. Austria Int.	S	



# Shortwave Guide



	RTE Ireland	M	Letter from Austria
		S	Saturday View
		M	This Week with Gerald Barry
0132	Voice of Russia	T-A	5-7 Live
		S	Moscow Yesterday and Today
0135	R. Austria Int.	M	Network Europe
0140	R. Habana Cuba	T/H/F	Caribbean Outlook
0145	VOA Spec. Eng.	T	This is America
		F	Making of a Nation
		A	American Mosaic
0154	Voice of Russia	H	Russia: People and Events

## INFORMATIONAL FEATURES

0100	R. for Peace Int.	T	Disability Radio Worldwide
0130	R. Australia	T	The Law Report
		W	The Religion Report
	R. for Peace Int.	S	Alternative Radio
0132	Voice of Russia	A	Christian Message from Moscow
		F	Education Report
0140	VOA Spec. Eng.	F	Heart and Soul (religion)
0145	BBCWS(am)	A	What's the Problem? (advice)

## MUSIC

0106	BBCWS(am)	M	Wright Round the World
	R. New Zealand Int.	M-F	Cadenza (light classics)
0120	R. Prague	S	Saturday Music (a mix)
	Voice of Vietnam	S	Vietnamese Music
0130	R. Australia	S	Oz Sounds
0132	BBCWS(am)	W	Music Review (magazine)
	Voice of Russia	W	Folk Box
		H	Jazz Show
		H	Musical Tales of St. Petersburg
		F	Music Around Us
0146	Voice of Russia	F	Music At Your Request

## ENTERTAINMENT

0100	WBCQ Maine	S	Marion's Attic (vintage recordings)
		M	Radio New York International
		A	Tasha Takes Control
0101	BBCWS(am)	S	Play of the Week (radio theatre)
0110	Voice of Vietnam	M	Sunday Show
0130	R. New Zealand Int.	A	Comedy Zone
0132	BBCWS(am)	T	Just A Minute (panel game)
		H/S	Westway (drama serial)
	Voice of Russia	M	Timelines

## SWL, MEDIA & COMMUNICATIONS

0100	HCJB Ecuador	S	Ham Radio Today
	R. for Peace Int.	W	World of Radio
		A	Continent of Media
0120	R. Budapest	A	DX Corner
0130	R. Australia	H	The Media Report
	R. for Peace Int.	A	World of Radio
0140	R. Habana Cuba	S/W	DXers Unlimited

## LISTENER CONTACT/INTERACTIVE

0100	R. for Peace Int.	F	Global Community Forum
0105	R. Budapest	M	And the Gatepost (monthly)
	R. Canada Int.	M	Maple Leaf Mailbag
0110	R. Prague	M	Mailbox
0115	Voice of Vietnam	H	Letterbox
0130	China R. Int.	A	Listeners' Garden
	R. for Peace Int.	W	RFPI Mailbag
0135	R. Canada Int.	W	Maple Leaf Mailbag
0140	R. Habana Cuba	M	Mailbag Show
0150	R. Austria Int.	S	Postbox

## SPORT

0123	VOA News Now	T-A	Sports Report
0130	R. Australia	F	The Sports Factor
	RTE Ireland	S	Sportsnews
0135	R. Habana Cuba	T-A	Time Out
0135	R. New Zealand Int.	D	Live Sport (as available)

## 0200 UTC/ 10pm E/7pm P - Page 44 Freqs

### NEWSCASTS (\*extended)

0200	BBCWS(am)	D	The World Today*
	R. Australia	D	News
	R. Habana Cuba	D	News
	R. Korea Int.	D	News
	R. New Zealand Int.	D	News
	R. Taipei Int.	D	News
	Voice of Russia	D	News
0230	R. Budapest	D	News
	Voice of Vietnam	D	News

## CURRENT AFFAIRS

0205	R. Australia	A	Background Briefing (documentaries)
0210	R. Australia	M-F	The World Today
0230	R. Sweden	T-A	60 Degrees North
0245	BBCWS(am)	T/W/F	Analysis
		H	From Our Own Correspondent

## BUSINESS/ECONOMICS

0211	Voice of Russia	W/A	Newmarket
0232	BBCWS(am)	M	World Business Review
		T-F	World Business Report
		A	Global Business (trends/ideas)
0235	R. Budapest	M	Europe Unlimited (trade-monthly)
0245	Voice of Vietnam	F	Vietnam Economy

## SCIENCE/TECHNOLOGY

0204	R. New Zealand Int.	A	Eureka
0211	Voice of Russia	T/F	Science & Engineering
0230	R. New Zealand Int.	A	Health [or] Environment Matters
0245	R. Sweden	F	Greenscan (ecology-2nd wk.)
			Heartbeat (health-3rd wk.)

## ARTS & CULTURE

0215	R. Taipei Int.	T	Culture Express
0230	R. Sweden	S	Spectrum (3rd wk.)
0235	R. Budapest	M	Spotlight (monthly)
0245	Voice of Vietnam	W	Culture & Society
0250	Voice of Vietnam	A	Literature and Arts

## LOCAL LIVES & VIEWS

0205	R. New Zealand Int.	S	Series on Maori matters
		M-F	In Touch with New Zealand
0215	R. Korea Int.	T-A	Seoul Calling (magazine)
	R. Taipei Int.	S	Great Wall Forum (mainland issues)
		W	Taiwan Today
		H	Discover Taiwan
		F	Taipei Magazine
0230	R. Sweden	S	Weekend (Europe magazine-1st wk.)
			Sweden Today (2nd wk.)
			Studio 49 (topical discussion-4th wk.)
	Voice of Russia	M	This is Russia
		T	Kaleidoscope (events)
		H	Moscow Yesterday and Today
0235	R. Budapest	S	Insight Central Europe
		M	Heading for Hungary (monthly)
		T-A	Hungary Today
0245	R. Korea Int.	T	Korea, Today & Tomorrow
		W	Korean Kaleidoscope (society)
		H	Wonderful Korea (travelogue)
		F	Seoul Report (interviews)
	R. Sweden	W	Close Up (profiles-1st/3rd wk)
		F	Nordic Report (1st wk.)
			The S-Files (things Swedish-4th wk)
		A	Review of the Newsweek
	Voice of Vietnam	T	Vietnam: Land & People
		A	Rural Vietnam
0254	Voice of Russia	W	Russia: People & Events

## INFORMATIONAL FEATURES

0200	R. for Peace Int.	M	New Dimensions
0232	BBCWS(am)	S	Reporting Religion
0232	Voice of Russia	F	Russian by Radio
0235	R. Habana Cuba	S	The World of Stamps
0245	BBCWS(am)	M	The Instant Guide (queries answered)
	R. Taipei Int.	M-F	Let's Learn Chinese

## MUSIC

0206	R. New Zealand Int.	M-F	Wayne's Music (thematic approach)
			From Habana
0210	R. Habana Cuba	M	Korean Pop Interactive
0215	R. Taipei Int.	M	Jade Bells and Bamboo Pipes (traditional)
0230	R. Habana Cuba	M	The Jazz Place [or] Top Tens
	R. Sweden	M	Sounds Nordic (exc. 1st wk.)
0332	Voice of Russia	S	Songs from Russia
		W	Musical Tales of St. Petersburg
0250	Voice of Vietnam	S	Music (Vietnamese)

## MAGAZINES/FEATURES

### ENTERTAINMENT

0205	R. Australia	S	Margaret Throsby Interview
0232	Voice of Russia	A	Audio Book Club
0240	Voice of Vietnam	M	Sunday Show

### SWL, MEDIA & COMMUNICATIONS

0200	R. for Peace Int.	W	Continent of Media
	WBCQ Maine	S	Pocket Calculator
0230	WHRA Maine (7580)	S	DXing with Cumbre
	WHRI Indiana (5745)	M	DXing with Cumbre
	WWCR Tennessee (5070)	S	World of Radio
0250	R. Budapest	A	DX Corner

### LISTENER CONTACT/INTERACTIVE

0210	R. Korea Int.	S	Worldwide Friendship
0211	Voice of Russia	S/M/H	Moscow Mailbag
0230	R. for Peace Int.	H	Global Community Forum
	R. Sweden	M	In Touch with Stockholm (1st wk.)
		S	Mailbag Time
0235	R. Taipei Int.	M	And the Gatepost (monthly)
0245	Voice of Vietnam	H	Letterbox
0246	Voice of Russia	S	You Write to Moscow

### SPORT

0200	R. New Zealand Int.	D	Live Sport (as available)
0205	BBCWS(am)	H	Sports International (magazine)
		S/A	Grandstand (live sports action*)
0245	R. Sweden	T	Sportscan
(*special on 9660, 12080, 17580, 21725 kHz. only)			

## 0300 UTC/ 11pm E/8pm P - Page 44 Freqs

### NEWSCASTS (\*extended)

0300	BBCWS(am)	D	News
	China R. Int.	D	News & Reports
	HCJB Ecuador	T-A	Latin American & World News
	R. Australia	D	News
	R. Habana Cuba	D	News
	R. New Zealand Int.	S/A	News
		M-F	Pacific Regional News
	R. Prague	D	News
	R. Taipei Int.	D	News
	R. Ukraine Int.	D	News
	RVi Belgium	T-S	News
	Voice of Russia	D	News
	Voice of Turkey	D	News
0330	Voice of Vietnam	D	News
0345	R. for Peace Int.	T-A	U.N. Today

### CURRENT AFFAIRS MAGAZINES/FEATURES

0305	Voice of Turkey	D	Press Review
0306	BBCWS(am)	S	From Our Own Correspondent
		T-A	Outlook (magazine)
0310	China R. Int.	S	Report on Developing Countries
			Weekly Review
	R. Habana Cuba	M	Pacific Report
	R. New Zealand Int.	W	Dateline Pacific
		F	Sunday Panorama
0311	Voice of Russia	M	News & Views
		T-A	Viewpoint
0315	R. Habana Cuba	T-S	Pacific Correspondent
0330	R. New Zealand Int.	F	60 Degrees North
	R. Sweden	T-A	Caribbean Outlook
0340	R. Habana Cuba	T/H/F	Weekly Review
		A	Review of the Newsweek
0345	R. Sweden	A	

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

0310	R. Prague	F	Economic Report
0313	RVi Belgium	F	Economics
0315	R. Taipei Int.	M	Taiwan Economic Journal
0330	China R. Int.	T	Biz China
	R. New Zealand Int.	W	Tradewinds
0345	Voice of Vietnam	F	Vietnam Economy

### SCIENCE/TECHNOLOGY (incl. Health & Environment)

0313	RVi Belgium	W	Green Society (ecology)
0330	R. Australia	A	In Conversation
0345	R. Sweden	F	Greenscan (ecology-2nd wk.)
			Heartbeat (health-3rd wk.)
0350	R. Habana Cuba	M	Breakthrough

### ARTS & CULTURE

0310	R. New Zealand Int.	M	Tagata o te Moana (Pacific culture)
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# Shortwave Guide



0313	R. Prague	A	The Arts
0315	R. Taipei Int.	F	Around the Arts
0320	China R. Int.	S	Taiwan Gourmet
	R. Prague	M	In the Spotlight
			Readings from Czech Literature
0330	HCJB Ecuador	A	Away from Politics (poetry)
	R. Sweden	F	Book & Spade (archaeology)
	R. Ukraine Int.	M	Spectrum (3rd wk.)
0332	Voice of Russia	W/F	Roots
			Russian history/culture program
0335	Voice of Turkey	S	Turkish Arts
		F	Culture Parade
0345	Voice of Vietnam	W	Culture and Society
0350	Voice of Vietnam	A	Literature & Arts

## LOCAL LIVES & VIEWS

0304	RVi Belgium	T-A	Flanders Today
0305	R. Australia	A	Rural Reporter (outback)
	R. Prague	S	Magazine (local color)
		M	Letter from Prague
		T-A	Newsview
	R. Ukraine Int.	T-A	Ukraine Today
0308	RVi Belgium	M	Tourism in Flanders
0310	HCJB Ecuador	T-A	Studio 9
	R. Prague	T	One on One (interview)
		W	Witness (oral history)
	Voice of Turkey	A	Archaeological Settlements
0313	RVi Belgium	T	Focus on Europe
0315	R. Taipei Int.	S	Great Wall Forum (mainland issues)
		H	Taipei Magazine
		A	Kaleidoscope
0318	RVi Belgium	H	Around Town
		A	Tourism in Flanders
0320	R. Australia	M-F	Life Matters (social issues)
	R. Prague	H	Czechs in History or Spotlight (places)
0324	Voice of Russia	M	Russia: People and Events
0330	China R. Int.	M	People in the Know
		W	China Horizons
		H	Voices from Other Lands
		F	Life in China
	R. Sweden	S	Network Europe (magazine-1st wk)
			Sweden Today (2nd wk)
			Studio 49 (topical discussion-4th wk)
0332	R. Taipei Int.	F	Discover Taiwan
	BBCWS(am)	S	People & Politics (British Parliament)
	Voice of Russia	S	Kaleidoscope (Russian events)
0345	R. Sweden	F	Nordic Report (1st wk.)
			The S-Files (things Swedish-4th wk)
		A	Review of the Newsweek
	Voice of Vietnam	T	Vietnam: Land and People
		A	Rural Vietnam

## INFORMATIONAL FEATURES

0305	R. New Zealand Int.	S	RPM (international documentaries)
0318	RVi Belgium	F	International Report
0330	R. Australia	S	All in the Mind (the brain)
0332	Voice of Russia	T/H/A	20th Century
0345	R. Taipei Int.	M-F	Let's Learn Chinese

## MUSIC

0300	RVi Belgium	S	Music from Flanders
0305	R. New Zealand Int.	A	Home Grown (NZ artists)
0310	R. New Zealand Int.	T	Top 5 & New Releases (pop/rock)
	R. Prague	S	Saturday Music (a mix)
	R. Ukraine Int.	M	Music from Ukraine
	Voice of Turkey	M	Tunes Spanning Centuries
0315	R. Taipei Int.	T	Jade Bells & Bamboo Pipes (traditional)
0324	RVi Belgium	M-A	Soundbox (Flemish rock/folk)
0330	HCJB Ecuador	S	Inspirational Classics
		H	Walkin' in the Sunshine (country)
	R. New Zealand Int.	T	Musica del Ecuador (Andean)
		A	New Releases
		A	Musical Chairs (NZ artist profile)
	R. Sweden	M	Sounds Nordic (rock-exc. 1st wk.)
0345	HCJB Ecuador	W	Wonderful Words of Life (hymns)
0350	Voice of Vietnam	S	Music (Vietnamese)

## ENTERTAINMENT

0300	WBCQ Maine	M	Radio New York International
0305	WWCR Tennessee(3215)	A	Golden Age of Radio Theatre
0332	Voice of Russia	M	Audio Book Club
0340	Voice of Vietnam	M	Sunday Show
0345	BBCWS(am)	T-A	Off the Shelf (book readings)

## SWL, MEDIA & COMMUNICATIONS

0300	HCJB Ecuador	S	DX Partyline
	KWHR Hawaii(17510)	M	DXing with Cumbre
	RVi Belgium	M	Radio World
	WWCR Tennessee(5070)	S	Spectrum
0310	R. New Zealand Int.	H	RNZI Talk (fortnightly)
0315	R. Ukraine Int.	S	Whole World on Radio Dial
0320	Voice of Turkey	S	DX Corner (fortnightly)
0330	WHRI Indiana(7315)	M	DXing with Cumbre
0340	R. Habana Cuba S/W		DXers Unlimited
0345	R. Bulgaria	S	R. Bulgaria Calling

## LISTENER CONTACT/INTERACTIVE

0300	HCJB Ecuador	M	Musical Mailbag
0305	R. Australia	S	Feedback
0306	BBCWS(am)	M	Talking Point (current issues)
0310	R. New Zealand Int.	H	Mailbox (fortnightly)
	R. Prague	M	Mailbox
	Voice of Turkey	W	Live from Turkey
0314	RVi Belgium	M	Brussels 1043
0315	Voice of Turkey	H	Letterbox
0330	China R. Int.	A	Listeners' Garden
	HCJB Ecuador	S	Saludos Amigos
	R. Sweden	M	In Touch with Stockholm (1st wk.)
	R. Taipei Int.	A	Mailbag Time
	R. Ukraine Int.	S	Hello from Kiev
	WRMI Florida	S	Viva Miami
0340	R. Habana Cuba M		Mailbag Show
0345	Voice of Vietnam	H	Letterbox

## SPORT

0300	R. Australia	S/A	Grandstand (live action)*
	R. New Zealand Int.	D	Live Sport (as available)
0310	R. Australia	M-F	Regional Sports Report
0318	RVi Belgium	T	Sports
0330	R. New Zealand Int.	H	The World in Sport
0335	R. Habana Cuba T-A		Time Out
0345	R. Sweden	T	Sportscan

(\*special on 9660, 12080, 17580, 21725 kHz. only)

## 0400 UTC/ 12am E/9pm P - Page 45 Freqs

## NEWSCASTS (\*extended)

0400	BBCWS(am)	D	World Briefing*
	China R. Int.	D	News & Reports
	R. Australia	D	News
	R. Habana Cuba D		News
	R. New Zealand Int.	D	News
	Voice of Russia	D	News
0430	R. Netherlands	S/M	News
0432	BBCWS(am)	M-F	The World Today*

## CURRENT AFFAIRS MAGAZINES/FEATURES

0400	R. for Peace Int.	T-A	Democracy Now!
0410	China R. Int.	S	Report on Developing Countries
	R. Australia	M-F	The World Today
0430	R. Netherlands	T-A	Newsline
0445	BBCWS(am)	A	Letter from America (Alistair Cooke)
0455	R. Netherlands	S	Insight (commentary)

## BUSINESS/ECONOMICS (also in Newscasts & Current Affairs)

0411	Voice of Russia	H	Newmarket
0430	BBCWS(am)	S	World Business Review
		A	World Business Report
	China R. Int.	T	Biz China

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

0411	Voice of Russia	W/A	Science and Engineering
0415	China R. Int.	A	Cutting Edge
0430	R. Australia	A	The Buzz (technology)

## ARTS & CULTURE

0420	China R. Int.	S	In the Spotlight
0430	R. Australia	S	The Arts

## LOCAL LIVES & VIEWS

0405	R. Australia	S	Pacific Focus-Society
	R. New Zealand Int.	M-F	In Touch with NZ
0430	China R. Int.	M	People in the Know

		W	China Horizons
		H	Voices from Other Lands
		F	Life in China
		S	Studio 9 Weekend
0432	HCJB Ecuador	W	Moscow Yesterday and To- day
	Voice of Russia		Europe Unzipped
0435	R. Netherlands	S	

## INFORMATIONAL FEATURES

0435	R. Habana Cuba S		The World of Stamps
0445	BBCWS(am)	S	The Instant Guide (queries answered)

## MUSIC

0400	WRMI Florida	S	Solid Rock Radio (unsigned/indie musicians)
0405	R. New Zealand Int.	A	Home Grown (from 0305)
0410	R. Habana Cuba M		From Habana
0411	Voice of Russia	S/M	Musical Tales of St. Petersburg
0430	R. Habana Cuba M		The Jazz Place [or] Top Tens
0432	Voice of Russia	M	Jazz Show
		T	Music Around Us
		H	Folk Box
0447	Voice of Russia	T	Music At Your Request

## ENTERTAINMENT

0400	WBCQ Maine	M-A	Amos 'n Andy (classic comedy)
	WRMI Florida	M	Jupiter 400 (the paranormal)
0405	R. New Zealand Int.	S	Sunday Drama (a play for radio)
	WWCR Tennessee	A	Golden Age of Radio Theatre (3215 kHz)
0432	Voice of Russia	F	Audio Book Club
		S/A	Timelines

## SWL, MEDIA & COMMUNICATIONS

0400	HCJB Ecuador	S	Ham Radio Today
	R. for Peace Int.	S	Counterspin
	WBCQ Maine	S	Tom & Darryl
	WWCR Tennessee(5070)	S	Cyber Line (digital)
0415	WBCQ Maine	M	World of Radio
0430	WHRA Maine(7580)	A	DXing with Cumbre

## LISTENER CONTACT/INTERACTIVE

0411	Voice of Russia	T/F	Moscow Mailbag
0430	China R. Int.	A	Listeners' Garden
0435	R. Netherlands	M	Sincerely Yours

## SPORT

0400	R. Australia	S/A	Grandstand (live action)*
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(\*special on 9660, 12080, 17580, 21725 kHz. only.)

## 0500 UTC/ 1am E/10pm P - Page 45 Freqs

## NEWSCASTS (\*extended)

0500	China R. Int.	D	News & Reports
	R. Australia	D	News
	R. Habana Cuba D		News
	R. Japan	D	News
	R. New Zealand Int.	D	News
0530	Voice of Nigeria	S/A	News

## CURRENT AFFAIRS MAGAZINES/FEATURES

0505	R. New Zealand Int.	M-F	Checkpoint
0510	China R. Int.	S	Report on Developing Countries
	R. Australia	M-F	Pacific Beat
	R. Habana Cuba M		Weekly Review
0515	R. Habana Cuba T-S		Viewpoint
	R. Japan	M-F	44 Minutes
0530	Voice of Nigeria	M-F	VON Scope
0540	R. Habana Cuba T/H/F		Caribbean Outlook
		A	Weekly Review

## BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

0500	R. Netherlands	A	A Good Life (development)
0505	R. Australia	A	Pacific Focus-Business
0530	China R. Int.	T	Biz China
0545	R. Australia	A	Business Weekend

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

0500	R. Netherlands	T	Research File
0515	China R. Int.	A	Cutting Edge
0550	R. Habana Cuba M		Breakthrough

## ARTS & CULTURE

0520	China R. Int.	S	In the Spotlight
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# Shortwave Guide



## LOCAL LIVES & VIEWS

0500	R. Netherlands	S	Amsterdam Forum (discussion)
		M	Dutch Horizons
0510	R. New Zealand Int.	A	Tagata o te Moana (Pacific magazine)
0530	China R. Int.	M	People in the Know
		W	China Horizons
		H	Voices from Other Lands
		F	Life in China

## INFORMATIONAL FEATURES

0500	R. Netherlands	H	Documentary
		F	The Sound Fountain (soundscapes)
	R. for Peace Int.	H	Alternative Radio
0510	R. New Zealand Int.	S	Spiritual Outlook
0530	HCJB Ecuador	T-A	Family Life Today
	R. Australia	A	Lingua Franca (about language)

## MUSIC

0500	R. Netherlands	W	Music 52-15 (world/folk)
	Voice of Nigeria	M-F	Wave Train
		A	African Safari
	WRMI Florida	S	Solid Rock Radio (from 0400)
0505	Voice of Nigeria	S	Link-Up (requests)
0510	R. Japan	S	Pop Joins the World
0530	R. Australia	S	Fine Music Australia (classical)
0540	R. New Zealand Int.	S	Jazz Spotlight

## ENTERTAINMENT

0500	WBCQ Maine	S	Juliet's Wild Kingdom
	WRMI Florida	M	Jupiter 400 (from 0400)
0505	BBCWS(am)	M	Wright Round the World (requests)

## SWL, MEDIA & COMMUNICATIONS

0500	WHRI Indiana	A	DXing with Cumbre
0530	R. for Peace Int.	S	Continent of Media
0540	R. Habana Cuba S/W		DXers Unlimited

## LISTENER CONTACT/INTERACTIVE

0510	R. Japan	A	Hello from Tokyo
0530	China R. Int.	A	Listeners' Garden
0540	R. Habana Cuba M		Mailbag Show

## SPORT

0500	R. Australia	S/A	Grandstand (live action)*
0505	R. Australia	A	Pacific Focus-SPORT
0535	R. Habana Cuba T-A		Time Out
	R. New Zealand Int.	D	Live Sport (as available)

(\*special on 9660, 12080, 17580, 21725 kHz. only.)

## 0600 UTC/ 2am E/11pm P - Page 46 Freqs

### NEWSCASTS (\*extended)

0600	R. Australia	D	News
	R. Habana Cuba	D	News
	R. Japan	D	News
	R. New Zealand Int.	D	News
0630	Voice of Nigeria	M-F	News*

### CURRENT AFFAIRS MAGAZINES/FEATURES

0615	R. Japan	M-F	Asian Top News (region's radio)
0630	R. New Zealand Int.	M-F	Worldwatch
	Voice of Nigeria	S/A	Weekly Analysis

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

0615	Voice of Nigeria	W	Wheel of Progress
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### SCIENCE/TECHNOLOGY (incl. Health & Environment)

0620	R. Australia	M	Ockham's Razor (science opinion)
		T	In Conversation
0635	R. Australia	S	Ockham's Razor

### ARTS & CULTURE

0600	Voice of Nigeria	F	African Writers
0607	R. New Zealand Int.	M-F	What's Going On?
0620	R. Australia	F	The Makers
0630	Voice of Nigeria	H	World of the Arts

### LOCAL LIVES & VIEWS

0600	R. for Peace Int.	W	RadioNation
	Voice of Nigeria	W	Nigerian Newsletter
		H	West African Scene
0607	R. New Zealand Int.	S	Whenua! (Maori program)
0610	R. Japan	S	Weekend Square

0615	Voice of Nigeria	M	Nigeria & Politics
		T	Nigerian Scene
		F	Images of Nigeria

## INFORMATIONAL FEATURES

0605	R. Australia	S	The Europeans
0620	R. Australia	W	The Ark (religious issues)
		H	Lingua Franca (language)
0625	R. Japan	T	Let's Try Japanese
		H	Brush Up Your Japanese
0635	R. Habana Cuba	S	World of Stamps

## MUSIC

0600	WRMI Florida	S	Solid Rock Radio (from 0400; to 0900)
0607	R. New Zealand Int.	A	The Mix
0610	R. Habana Cuba M		From Havana (Cuban musicians)
	R. Japan	A	Pop Joins the World
0625	R. Japan	M	Japan Music Log
		W	Japan Musical Treasure Box
		F	Music Beat (pop)
0630	R. Australia	A	Oz Sounds
	R. Habana Cuba M		The Jazz Place [or] Top Tens
0640	R. Australia	M	Australian Music Show (modern rock)
		T	Music Deli (international)
		W	Blacktracker (Aboriginal)
		H	Australia Country Style
		F	Jazz Notes

## ENTERTAINMENT

0600	WRMI Florida	M	Jupiter 400 (from 0400; to 0900)
0645	R. New Zealand Int.	M-F	Storytime (for children)

## SWL, MEDIA & COMMUNICATIONS

0600	KWHR Hawaii(17780)	A	DXing with Cumbre
	R. for Peace Int.	S	World of Radio
0630	R. for Peace Int.	M	World of Radio
		W	CounterSpin

## LISTENER CONTACT/INTERACTIVE

0605	R. Australia	S	Feedback
0615	Voice of Nigeria	S	Listeners' Letters
0630	R. for Peace Int.	S	RFPI Mailbag

## SPORT

0600	R. Australia	S/A	Grandstand (live action)*
	R. New Zealand Int.	D	Live Sport (as available)
0610	R. Australia	M-F	Regional Sports Report

(\*special on 9660, 12080, 17580, 21725 kHz. only.)

## 1000 UTC/6am E/3am P - Page 47 Freqs

### NEWSCASTS (\*extended)

1000	BBCWS(am)	S/A	News
		M-F	World Briefing*
	R. Australia	D	News
	R. New Zealand Int.	D	News
	VOA News Now	D	News & Reports*
1030	R. Netherlands	S/A	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1000	R. for Peace Int.	T-A	Democracy Now!
1005	R. Australia	M-F	Asia Pacific
	R. New Zealand Int.	M-F	Late Edition
1006	BBCWS(am)	S	From Our Own Correspondent
		A	Assignment (one topic in-depth)
1010	WWCR Tennessee(5070)	S	A View from Europe
1030	R. Netherlands	M-F	Newsline
1032	BBCWS(am)	A	Agenda (trends)
1034	VOA News Now	F/A	On the Line (US foreign policy)
1035	R. Netherlands	S	Wide Angle (one topic examined)

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

1032	BBCWS(am)	M-F	World Business Report
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### SCIENCE/TECHNOLOGY (incl. Health & Environment)

1030	R. Australia	M	Health Report
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## LOCAL LIVES & VIEWS

1005	R. Australia	A	Australian Express
1034	VOA News Now	S-H	Main Street
1035	R. Netherlands	A	Europe Unzipped
1055	R. Netherlands	A	Insight (commentary)

## INFORMATIONAL FEATURES

1030	R. Australia	T	Law Report
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1032	BBCWS(am)	W	Religion Report
		S	Reporting Religion

## MUSIC

1005	R. Australia	S	Go Zone (pop)
1012	R. New Zealand Int.	A	Deep Purple (relaxing)

## SWL, MEDIA & COMMUNICATIONS

1000	KWHR Hawaii(11565)	A	DXing with Cumbre
	R. for Peace Int.	S	CounterSpin
1012	R. New Zealand Int.	S	Mediawatch
1030	R. Australia	H	Media Report
1040	VOA News Now	S	Kim Elliott (w/in Main St., time approx.)

## LISTENER CONTACT/INTERACTIVE

1015	WWCR Tennessee(15825)	S	A s k
			WWCR

## SPORT

1030	R. Australia	F	Sports Factor
1045	BBCWS(am)	M-F	Sports Roundup

## 1100 UTC/ 7am E/4am P - Page 48 Freqs

### NEWSCASTS (\*extended)

1100	BBCWS(am)	D	World Briefing*
	BBCWS(eas)	S	World Briefing*
		M-A	News
	R. Australia	D	News
	R. Japan	D	News
	R. New Zealand Int.	D	News
1120	BBCWS(eas)	S	British News
1130	HCJB Ecuador	M-F	Latin American & World News
	R. Korea Int.	D	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1105	BBCWS(am)	M-F	Caribbean Morning Report
	R. Australia	S	Correspondents' Report
		M-A	Asia Pacific
	WWCR Tennessee(15825)	A	A View from Europe
1106	BBCWS(eas)	M-F	Outlook (magazine)
1115	R. Japan	M-F	Asian Top News (region's radio)
1132	BBCWS(am)	S	Letter from America (Alistair Cooke)
		T/W/F	Analysis
		H	From Our Own Correspondent

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

1100	R. Netherlands	T	A Good Life (development issues)
1130	R. Australia	S	Business Report
	R. Netherlands	F	A Good Life (development issues)

### SCIENCE/TECHNOLOGY (incl. Health & Environment)

1100	R. Netherlands	H	Research File
1130	R. Netherlands	M	Research File

### ARTS & CULTURE

1106	BBCWS(eas)	A	The Ticket (arts/performance)
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## LOCAL LIVES & VIEWS

1100	R. Netherlands	M	EuroQuest
		W	Dutch Horizons
1105	R. New Zealand Int.	S/A	NZ Forces Radio
		T-H	Today in Parliament
1110	WWCR Tennessee	S	A View from Europe (5070 kHz)
1115	BBCWS(am)	M-F	Caribbean Magazine
1120	BBCWS(am)	D	British News
1130	R. Australia	M-F	Bush Telegraph (rural life)
	R. Netherlands	S	Dutch Horizons
1145	R. Korea Int.	M-F	Seoul Calling

## INFORMATIONAL FEATURES

1100	R. for Peace Int.	H	Alternative Radio
	R. Netherlands	S	The Sound Fountain
		F	Documentary
		A	Amsterdam Forum (discussion)
1125	R. Japan	T	Let's Learn Japanese
		H	Brush Up Your Japanese
1130	R. Netherlands	W	Documentary
		H	The Sound Fountain
1132	BBCWS(am)	M	The Instant Guide (queries answered)

# Shortwave Guide



## MUSIC

1105	WWCR Tennessee(5070)	A	Rock the Universe (Christian rock)
1106	R. New Zealand Int.	M	The Mix
1110	R. Japan	F	Music feature or series
1111	R. New Zealand Int.	A	Pop Joins the World
		T	Showtime (show tunes)
		W	In a Mellow Tone
1125	R. Japan	H	Music feature or series
		M	Japan Music Log
		W	Japan Musical Treasure Box
		F	Music Beat (pop)
1130	R. Australia	A	Fine Music Australia (classical)
	R. Netherlands	T/A	Music 52-15 (international)
1140	R. Korea Int.	S	Korean Pop Interactive

## ENTERTAINMENT

1130	HCJB	M-F	Morning in the Mountains
1132	BBCWS(eas)	S	Play of the Week (radio theatre)
1145	BBCWS(eas)	M-F	Off the Shelf (readings)

## SWL, MEDIA & COMMUNICATIONS

1130	R. for Peace Int.	S	Continent of Media
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## LISTENER CONTACT/INTERACTIVE

1100	WRMI Florida	A	Viva Miami
1110	R. Japan	S	Hello From Tokyo
1130	WRMI Florida	M-F	Viva Miami
1140	R. Korea Int.	A	Worldwide Friendship

## SPORT

1110	BBCWS(am)	M-F	Caribbean Sport
1130	R. Australia	M-F	Regional Sports Report
1132	BBCWS(am)	A	World Football (magazine)
1145	BBCWS(am)	S-H/A	Sports Roundup
	BBCWS(am)	F	Football Extra

## 1200 UTC/ 8am E/5am P - Page 48 Freqs

### NEWSCASTS (\*extended)

1200	BBCWS(am)	D	Newshour*
	BBCWS(eas)	M-A	News
	HCJB Ecuador	M-F	Latin American & World News
	R. Australia	D	News
	R. Canada Int.	M-F	News
	R. Netherlands	S/A	News
	R. New Zealand Int.	D	News
1230	HCJB Ecuador	M-F	Latin American & World News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1200	R. Netherlands	M-F	Newsline
1205	R. Canada Int.	M-F	The Current
	R. New Zealand Int.	M-F	Late Edition
1206	BBCWS(eas)	H	Assignment
1210	BBCWS(am)	M-F	Caribbean Morning Report
1230	R. Sweden	M-F	60 Degrees North

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

1205	BBCWS(am)	M-F	Caribbean Business
1232	BBCWS(eas)	F	The Music Biz (the music industry)

### SCIENCE/TECHNOLOGY (incl. Health & Environment)

1245	R. Sweden	H	Greenscan (ecology-2nd wk.)
			Heartbeat (3rd wk.)

### ARTS & CULTURE

1206	BBCWS(eas)	T	Masterpiece (cultural ideas)
1230	R. Sweden	A	Spectrum (3rd wk.)

### LOCAL LIVES & VIEWS

1205	R. Australia	M-H	Late Night Live (discussion)
	R. Netherlands	A	Europe Unzipped
	R. New Zealand Int.	A	NZ Forces Radio
1215	R. Korea Int.	M	Korea, Today & Tomorrow
		T	Korean Kaleidoscope (society)
		W	Wonderful Korea (travelogue)
		H	Seoul Report (interviews)
1230	R. Sweden	A	Network Europe (Europe magazine-1st wk.)
			Sweden Today (2nd)
			Studio 49 (discussion-4th)
1245	R. Sweden	T	Close-Up (profiles-1st/3rd wk)
		H	Nordic Report (1st)
			The S-Files (things Swedish-4th)
		F	Review of the Newsweek

## INFORMATIONAL FEATURES

1200	R. for Peace Int.	W	RadioNation
1205	R. Australia	A	The Spirit of Things (spiritual matters)
1206	BBCWS(eas)	M	Spinning to Win (political spin)
		W	Documentaries
1220	HCJB Ecuador	M-F	Mission Network News
1232	BBCWS(eas)	S	Reporting Religion

## MUSIC

1201	BBCWS(eas)	A	In Concert (by BBC ensembles)
1205	R. Australia	S	Nocturne (night music)
		F	Sound Quality (innovative)
	WWCR Tennessee(5070)	A	Rock the Universe (from 1105)
1230	R. Sweden	S	Sounds Nordic (rock-exc. 1st wk.)
	WWCR Tennessee(15825)	T	Music Memories
1232	BBCWS(eas)	M	The Music Feature
		T	Top of the Pops (UK top 20)
		W	Charlie Gillett (world music)
		F	John Peel (eclectic)

## ENTERTAINMENT

1200	BBCWS(eas)	S	Play of the Week (from 1130)
	HCJB Ecuador	M-F	Morning in the Mountains (from 1130)
		A	Adventures in Odyssey (children's stories)

## SWL, MEDIA & COMMUNICATIONS

1200	R. for Peace Int.	S	World of Radio
	WHRI Indiana(9840)	A	DXing with Cumbre
1230	R. for Peace Int.	M	World of Radio
		W	Counterspin
	WHRI Indiana(15105)	A	DXing with Cumbre

## LISTENER CONTACT/INTERACTIVE

1200	WRMI Florida	S	Viva Miami
1205	R. Netherlands	S	Sincerely Yours
1230	R. Sweden	S	In Touch with Stockholm (1st wk.)

## SPORT

1205	HCJB	M-F	Sports News
	R. New Zealand Int.	S	Sportsworld (weekend review)
1206	BBCWS(eas)	F	Sports International (magazine)
1245	R. Sweden	M	Sportscan

## 1300 UTC/ 9am E/6am P - Page 49 Freqs

### NEWSCASTS

1300	BBCWS(am)	D	News
	BBCWS(eas)	D	Newshour*
	China R. Int.	D	News & Reports*
	R. Australia	D	News
	R. Canada Int.	D	News
	R. New Zealand Int.	D	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1305	BBCWS(am)	M-F	Outlook
1310	China R. Int.	S	Report on Developing Countries
1330	R. Sweden	M-F	60 Degrees North

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

1330	China R. Int.	T	Biz China
	WRMI Florida	M-F	Stock Talk Live

### SCIENCE/TECHNOLOGY (incl. Health & Environment)

1305	R. Australia	A	The Science Show
1315	China R. Int.	A	Cutting Edge
1345	R. Sweden	H	Greenscan (ecology-2nd wk.)
			Heartbeat (health-3rd wk.)

### Arts/Culture

1306	BBCWS(am)	S	The Ticket (arts/performance)
1320	China R. Int.	S	In the Spotlight
1330	R. Sweden	A	Spectrum (3rd Sat.)

### LOCAL LIVES & VIEWS

1305	R. Canada Int.	S	The Sunday Edition (interviews/documentaries)
		M-F	Sounds Like Canada
		A	The House (Parliament)
1330	China R. Int.	M	People in the Know
		W	China Horizons
		H	Voices from Other Lands

	F	Life in China
HCJB Ecuador	A	Studio 9 Weekend
R. Sweden	A	Network Europe (magazine-1st wk.)
		Sweden Today (2nd wk.)
		Studio 49 (discussion-4th wk.)
R. Sweden	T	Close Up (profiles - 3rd wk.)
	H	Nordic Report (1st wk.)
		The S-Files (things Swedish-4th wk.)
	F	Review of the Newsweek

## INFORMATIONAL FEATURES

1300	R. for Peace Int.	T	Disability Radio Worldwide
1330	HCJB Ecuador	M-F	Family Life Today
	R. for Peace Int.	S	Alternative Radio

## MUSIC

1305	R. Australia	S	Nocturne (from 1205)
		M-F	The Planet (international)
	VOA News Now	S/A	Jazz America
		M	American Gold (oldies)
		T	Roots & Branches (folk)
		W	Classic Rock
		H	Top 20
		F	Country Hits
	WWCR Tennessee(15825)	M-F	World Wide Country Radio
1330	BBCWS(am)	S	The Music Feature
	R. Sweden	S	Sounds Nordic (rock/pop-exc. 1st wk.)
	WWCR Tennessee T		Musical Memories (15825 kHz)

## ENTERTAINMENT

1306	BBCWS(am)	A	Pick of the World (BBC's best)
1330	WWCR Tennessee(15825)	S	The Old Record Shop
1345	BBCWS(am)	M-F	Off the Shelf (book readings)

## SWL, MEDIA & COMMUNICATIONS

1300	R. for Peace Int.	W	World of Radio
		F	Far Right Radio Review
		A	Continent of Media
	WHRI Indiana	A	DXing with Cumbre (9840 kHz)
	WRMI Florida	S	Wavescan
1330	R. for Peace Int.	A	World of Radio
	WHRI Indiana	A	DXing with Cumbre (15105 kHz)

## LISTENER CONTACT/INTERACTIVE

1300	R. for Peace Int.	F	Global Community Forum
1330	China R. Int.	A	Listeners' Garden
	R. for Peace Int.	W	RFPI Mailbag
	R. Sweden	S	In Touch with Stockholm (1st wk.)
1345	BBCWS(am)	A	Write On

## SPORT

1345	R. Sweden	M	Sportscan
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## 1400 UTC/ 10am E/7am P - Page 49 Freqs

### NEWSCASTS (\*extended)

1400	BBCWS(am)	D	News
	BBCWS(eas)	S/A	News
	China R. Int.	D	News & Reports*
	R. Australia	D	News
	R. Canada Int.	D	News
	R. Japan	D	News
1430	BBCWS(eas)	M-F	British News
	R. Netherlands	S/A	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1400	BBCWS(eas)	M-F	East Asia Today
1406	BBCWS(am)	H	Assignment (one topic in-depth)
1410	China R. Int.	S	Report on Developing Countries
1415	R. Japan	M-F	44 Minutes
1430	R. Netherlands	M-F	Newsline
	R. Sweden	M-F	60 Degrees North

### BUSINESS/ECONOMICS (also in NEWSCASTS & Current Affairs)

1400	WRMI Florida	M-F	Stock Talk Live (from 1330)
1410	China R. Int.	T	Biz China

### SCIENCE/TECHNOLOGY (incl. Health & Environment)

1415	China R. Int.	A	Cutting Edge
1445	R. Sweden	H	Greenscan (ecology-2nd wk.)
			Heartbeat (health-3rd wk.)



# Shortwave Guide



## ARTS & CULTURE

1406	BBCWS(am)	T	Masterpiece (cultural ideas)
	R. Australia	S	Books & Writing
1420	China R. Int.	S	In the Spotlight
1430	R. Sweden	S	Spectrum (3rd wk.)

## LOCAL LIVES & VIEWS

1405	HCJB Ecuador	A	Studio 9 Weekend (from 1330)
	R. Canada Int.	S	The Sunday Edition (from 1305)
		M-F	Sounds Like Canada (from 1305)
1410	R. Japan	A	Weekend Square
1430	China R. Int.	M	People in the Know
		W	China Horizons
		H	Voices from Other Lands
		F	Life in China
	R. Canada Int.	M	Real Life Chronicles
		F	C'est la Vie (in French Canada)
	R. Sweden	A	Network Europe (Europe magazine-1st wk.)
			Sweden Today (2nd wk.)
			Studio 49 (discussion-4th wk.)
1432	BBCWS(eas)	M-F	British News
1435	R. Netherlands	A	Europe Unzipped
1445	R. Canada Int.	M-H	Out Front ("first person" radio)
		T	Close Up (profiles-1st/3rd wk.)
		H	Nordic Report (1st wk.)
			The S-Files (things Swedish-4th wk.)
		F	Review of the Newsweek
1455	R. Netherlands	A	Insight (commentary)

## INFORMATIONAL FEATURES

1400	R. for Peace Int.	S	Alternative Radio (from 1330)
		M	New Dimensions
		F	Disability Radio Worldwide
1405	R. Australia	A	New Dimensions
1406	BBCWS(am)	M	Spinning to Win (political spin)
		W	Documentaries

## MUSIC

1400	WRMI Florida	S	Solid Rock Radio (unsigned/indie musicians)
1405	R. Japan	S	Pop Joins the World
1430	BBCWS(am)	M	The Music Feature
		T	Top of the Pops (UK top 20)
		W	Charlie Gillett (world)
		H	John Peel (eclectic)
	R. Sweden	S	Sounds Nordic (rock/pop-exc. 1st wk.)

## ENTERTAINMENT

1405	R. Australia	M-F	Margaret Throsby (interview/music)
	R. Canada Int.	A	Vinyl Cafe (music/humor)

## SWL, MEDIA & COMMUNICATIONS

1400	R. for Peace Int.	W	Continent of Media
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## LISTENER CONTACT/INTERACTIVE

1400	R. for Peace Int.	A	RFPI Mailbag
1406	BBCWS(am)(eas)	S	Talking Point (current events call-in)
1430	China R. Int.	A	Listeners' Garden
	R. for Peace Int.	H	Global Community Forum
	R. Sweden	S	In Touch with Stockholm (1st wk.)
1435	R. Netherlands	S	Sincerely Yours

## SPORT

1406	BBCWS(am)	F	Sports International (magazine)
	BBCWS(am)(eas)	A	Sportsworld (live action)
1445	R. Sweden	M	Sportscan
	BBCWS(eas)	M-H	Sports Roundup
		F	Football Extra

## 1500 UTC/ 11am E/8am P - Page 50 Freqs

### NEWSCASTS

1500	BBCWS(am)	D	News
	China R. Int.	D	News
	R. Australia	D	News
	R. Canada Int.	S/A	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1505	R. Australia	M-F	Asia Pacific
1506	BBCWS(am)	S	Assignment (one topic in-

1510	China R. Int.	S	depth) Report on Developing Countries
1530	R. Austria Int.	D	Report from Austria

## BUSINESS/FINANCE (also in NEWSCASTS & Current Affairs)

1500	R. Netherlands	F	A Good Life (development issues)
1530	China R. Int.	T	Biz China
	R. Netherlands	T	A Good Life
1555	R. Australia	S	Business Weekend

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

1500	R. Netherlands	M	Research File
1505	R. Canada Int.	A	Quirks and Quarks
1506	BBCWS(am)	M	Health Matters
		T	Go Digital (infotech)
		W	Discovery (research)
		H	One Planet (ecology)
		F	Science in Action (magazine)
1515	China R. Int.	A	Cutting Edge
1530	R. Australia	M	The Health Report
	R. Netherlands	H	Research File

## ARTS & CULTURE

1520	China R. Int.	S	In the Spotlight
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## LOCAL LIVES & VIEWS

1500	R. Netherlands	S	Dutch Horizons
1505	R. Canada Int.	S	The Sunday Edition (from 1305)
1530	China R. Int.	M	People in the Know
		W	China Horizons
		H	Voices from Other Lands
		F	Life in China
	R. Austria Int.	S	Letter from Austria
		A	Insight Central Europe
	R. Netherlands	M	EuroQuest
		W	Dutch Horizons
1532	BBCWS(am)	S	People & Politics (British Parliament)
1535	R. Austria Int.	S	Network Europe

## INFORMATIONAL FEATURES

1500	R. Netherlands	W	Documentary
		H	The Sound Fountain
1505	R. Australia	S	Encounter (spiritual beliefs)
1530	R. Australia	T	The Law Report
		W	The Religion Report
	R. Netherlands	S	The Sound Fountain
		F	Documentary
1532	BBCWS(am)	S	The Word (books, writers & readers)
1545	BBCWS(am)	W	Heart & Soul (religious matters)
		F	What's the Problem? (advice)

## MUSIC

1500	R. Netherlands	T/A	Music 52-15 (international)
	WRMI Florida	S	Solid Rock Radio (from 1400)
1505	R. Australia	A	Nocturne (night music)
1532	BBCWS(am)	T	Music Review (magazine)

## ENTERTAINMENT

1532	BBCWS(am)	M	Just A Minute (panel game)
		W/F	Westway (drama serial)

## SWL, MEDIA & COMMUNICATIONS

1500	WHRI Indiana(13760)	A	DXing with Cumbre
1530	R. Australia	H	The Media Report

## LISTENER CONTACT/INTERACTIVE

1530	China R. Int.	A	Listeners' Garden
1550	R. Austria Int.	A	Postbox

## SPORT

1505	BBCWS(am)	A	Sportsworld (from 1405)
1530	R. Australia	F	The Sports Factor

## 1600 UTC/ 12pm E/9am P - Page 50 Freqs

### NEWSCASTS (\*extended)

1600	BBCWS(am)	S/A	News
	R. Australia	D	News
	R. Netherlands	S/A	News

### CURRENT AFFAIRS MAGAZINES/FEATURES

1600	BBCWS(am)	M-F	Europe Today
	R. Netherlands	M-F	Newsline
	R. for Peace Int.	M-F	Democracy Now!

1605	R. Netherlands	S	Wide Angle (one topic focus)
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## LOCAL LIVES & VIEWS

1605	R. Australia	S	The National Interest
		M-F	Bush Telegraph (rural issues)
		A	Europe Unzipped
1630	R. Netherlands	W	Street Stories (Australian voices)
	R. Australia		

## MUSIC

1600	WRMI Florida	S	Solid Rock Radio (from 1400)
1605	R. Australia	A	Nocturne (from 1505)
1630	WWCR Tennessee(12160)	A	Ken's Country Classics

## SWL, MEDIA & COMMUNICATIONS

1600	KWHR Hawaii(9930)	A	DXing with Cumbre
	R. for Peace Int.	A	CounterSpin

## SPORT

1605	BBCWS(am)	S/A	Sportsworld (live action)
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## 1700 UTC/ 1pm E/10am P - Page 51 Freqs

### NEWSCASTS (\*extended)

1700	R. Australia	D	News
	R. Japan	D	News

### CURRENT AFFAIRS

1700	R. Africa Int.	D	Reports, features, music
1715	R. Japan	M-F	44 Minutes

## LOCAL LIVES & VIEWS

1705	R. Australia	M-F	Australia Talks Back (phone-in)
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## INFORMATIONAL FEATURES

1700	R. for Peace Int.	W	Alternative Radio
1705	R. Australia	S	The Spirit of Things (spiritual matters)
		A	New Dimensions

## MUSIC

1700	WRMI Florida	S	Solid Rock Radio (from 1400; to 2000)
1704	R. Austria Int.	S	My Music with Paul Catty
1710	R. Japan	A	Pop Joins the World
1730	VOA Africa	S	Music Time in Africa

## SWL, MEDIA & COMMUNICATIONS

1730	R. for Peace Int.	A	Continent of Media
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## LISTENER CONTACT/INTERACTIVE

1706	VOA Africa	M-F	Talk to America (listener phone-in)
1710	R. Japan	S	Hello from Tokyo
1715	WWCR Tennessee(12160)	W	A s k
		S	WWCR (exc. 2nd/3rd wk)
1730	WWCR Tennessee(15825)	S	A s k
			WWCR

## 2100 UTC/ 5pm E/2pm P - Page 53 Freqs

### NEWSCASTS (\*extended)

2100	BBCWS(am)	S/A	News
		M-F	World Briefing
	R. Australia	D	News
	R. Japan	D	News
	R. Prague	D	News
2145	R. for Peace Int.	M-F	U.N. Today

### CURRENT AFFAIRS MAGAZINES/FEATURES

2110	R. Australia	S-H	AM (morning news magazine)
2115	R. Japan	M-F	Asian Top News (region's radio)
2145	BBCWS(am)	M/T/H/F	Analysis
		W	From Our Own Correspondent

## BUSINESS/FINANCE (also in NEWSCASTS & Current Affairs)

2110	R. Prague	H	Economic Report
2132	BBCWS(am)	M-F	World Business Report

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

2130	R. Australia	T	Innovations
		H	All in the Mind (the brain)

# Shortwave Guide



## ARTS & CULTURE

2110	R. Prague	F	The Arts
2120	R. Prague	S	Readings from Czech Literature
		F	Away from Politics (poetry)

## LOCAL LIVES & VIEWS

2105	R. Australia	A	Australia All Over
	R. Prague	S	Letter from Prague
		M-F	Newsview
		A	Magazine (local color)
2110	R. Japan	A	Weekend Square
	R. Prague	M	One on One (interview)
		T	Witness (oral history)
2115	BBCWS(am)	M-F	Caribbean Report*
2120	BBCWS(am)	M-F	British News
	R. Prague	T	Talking Point
		W	Czechs in History [or] Spotlight (places)
2130	BBCWS(am)	T/F	Calling the Falklands ^
	R. Australia	M	Rural Reporter

(\*special service on 5975, 11675, 15390 kHz. only.)

(^special service on 11680 kHz.)

## INFORMATIONAL FEATURES

2106	BBCWS(am)	S	Documentaries
2115	R. Japan	T	Let's Learn Japanese
		H	Brush Up Your Japanese
2130	R. Australia	M	Country Breakfast (rural issues)
		W	Educational series
2132	BBCWS(am)	S	In Praise of God (worship service)

## MUSIC

2105	R. Japan	S	Pop Joins the World
	VOA News Now	S/A	Jazz America
		M	American Gold (oldies)
		T	Roots & Branches (folk)
		W	Classic Rock
		H	Top 20
		F	Country Hits
2110	R. Prague	A	Saturday Music (a mix)
2125	R. Japan	M	Japan Music Log
		W	Japan Musical Treasure Box
		F	Music Beat
2130	R. Australia	F	Oz Sounds

## ENTERTAINMENT

2100	WBCQ Maine(7415)	S	Radio Free Euphoria
		M	Jean Shepherd
		F	Pan Global Wireless
		A	HarvZower
2101	BBCWS(am)	A	Play of the Week (radio theatre)
2130	WBCQ Maine(7415)	F	The Pab Sungenis Project

## SWL, MEDIA & COMMUNICATIONS

2100	WHRA Maine(17650)	F	DXing with Cumbre
	WHRI Indiana(5745)	S	DXing with Cumbre
	WRMI Florida	S	Wavescan
2130	WHRA Maine(17650)	A	DXing with Cumbre

## LISTENER CONTACT/INTERACTIVE

2105	R. Australia	F	Feedback
2110	R. Prague	S	Mailbox
2130	WRMI Florida	S	Viva Miami

## SPORT

2130	BBCWS(am)	H	Sports International (magazine)
------	-----------	---	---------------------------------

2243	RVi Belgium	M	Focus on Europe
2248	RVi Belgium	H	International Report

## BUSINESS/FINANCE (also in NEWSCASTS & Current Affairs)

2240	R. Prague	H	Economic Report
2243	RVi Belgium	H	Economics

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

2240	R. Australia	S	Ockham's Razor (science opinion)
		M	In Conversation
2243	RVi Belgium	T	Green Society (ecology)

## ARTS & CULTURE

2235	Voice of Turkey	H	Culture Parade
		A	Turkish Arts
2240	R. Australia	H	The Makers
	R. Prague	F	The Arts
2243	RVi Belgium	W/F	Around the Arts
2250	R. Prague	S	Readings from Czech Literature
		F	Away from Politics (poetry)

## LOCAL LIVES & VIEWS

2210	Voice of Turkey	F	Archaeological Settlements
2234	RVi Belgium	M-F	Flanders Today
2235	R. Prague	S	Letter from Prague
		M-F	Newsview
		A	Insight Central Europe
2238	RVi Belgium	S	Tourism in Flanders
2240	R. Prague	M	One on One (interview)
		T	Witness (oral history)
2248	RVi Belgium	W	Around Town
		F	Tourism in Flanders
2250	R. Prague	T	Talking Point (Czech issues)
		W	Czechs in History [or] Spotlight (places)

## INFORMATIONAL FEATURES

2240	R. Australia	T	The Ark (religious issues)
		W	Lingua Franca (language)

## MUSIC

2210	Voice of Turkey	S	Tunes Spanning Centuries
2230	RVi Belgium	A	Music from Flanders
2254	RVi Belgium	S-F	Soundbox
2255	R. Australia	S-H	The Pulse

## ENTERTAINMENT

2200	WBCQ Maine	A	Radio Timtron Worldwide
2230	R. Canada Int.	A	Madly Off in All Directions (comedy/satire)
	WBCQ Maine	W	Goddess Irina I Music Show
		H	Uncle Ed's Musical Memories
		F	WDCD

## SWL, MEDIA & COMMUNICATIONS

2200	R. for Peace Int.	A	CounterSpin
	WBCQ Maine	W	World of Radio
	WHRI Indiana(5745)	A	DXing with Cumbre
2220	Voice of Turkey	F	DX Corner (fortnightly)
2230	RVi Belgium	S	Radio World
	WRMI Florida	A	Wavescan

## LISTENER CONTACT/INTERACTIVE

2210	Voice of Turkey	T	Live from Turkey
2240	R. Prague	S	Mailbox
2215	Voice of Turkey	W	Letterbox
2244	RVi Belgium	S	Brussels 1043

## SPORT

2230	R. Canada Int.	S	The Inside Track
2248	RVi Belgium	M	Sports

## 2300 UTC/ 7pm E/4pm P - Page 54 Freqs

### NEWSCASTS (\*extended)

2300	BBCWS(am)	D	News
	China R. Int.	D	News & Reports*
	R. Australia	D	News
	R. Canada Int.	D	News
2330	R. Netherlands	S/A	News

### CURRENT AFFAIRS

2305	R. Canada Int.	M-F	As It Happens (from 2230)
2306	BBCWS(am)	M-F	Outlook
2310	China R. Int.	A	Report on Developing Countries
		S-H	Asia Pacific
2330	R. Australia	W	Dispatches (international)
	R. Netherlands	M-F	Newsline

### MAGAZINES/FEATURES

2330	China R. Int.	M	Biz China
	R. Australia	S	Business Report

## SCIENCE/TECHNOLOGY (incl. Health & Environment)

2305	R. Australia	A	All in the Mind (the brain)
	R. Canada Int.	A	Quirks & Quarks
2315	China R. Int.	F	Cutting Edge
2330	R. Australia	T	Earthbeat (ecology)
		H	The Buzz (infotech)
		A	Innovations

## ARTS & CULTURE

2320	China R. Int.	A	In the Spotlight
2330	R. Australia	W	The Arts

## LOCAL LIVES & VIEWS

2330	China R. Int.	S	People in the Know
		T	China Horizons
		W	Voices from Other Lands
		H	Life in China
2335	R. Netherlands	A	Europe Unzipped
2355	R. Netherlands	A	Insight (commentary)

## INFORMATIONAL FEATURES

2300	R. for Peace Int.	W	Alternative Radio
2305	R. Australia	F	Lingua Franca (about language)
2306	BBCWS(am)	S	Spinning to Win (political spin)
2330	R. Australia	M	The Europeans

## MUSIC

2300	WBCQ Maine	F	Lost Discs Radio Show
		A	Fred Flintstone Music Show
2305	R. Canada Int.	S	Global Village (world/folk)

## ENTERTAINMENT

2300	WBCQ Maine	S	Le Show
		H	Uncle Ed's Musical Memories (from 2230)
2306	BBCWS(am)	A	Pick of the World (BBC's best)

2332	BBCWS(am)	S	Just A Minute (panel game)
2345	BBCWS(am)	M-F	Off the Shelf (readings)

## SWL, MEDIA & COMMUNICATIONS

2300	WBCQ Maine	W	Off the Hook (public telecom issues)
		A	Real Amateur Radio Show
2330	R. for Peace Int.	A	Continent of Media
	WBCQ Maine	W	World of Radio

## LISTENER CONTACT/INTERACTIVE

2330	China R. Int.	F	Listeners' Garden
2335	R. Netherlands	S	Sincerely Yours
2345	BBCWS(am)	A	Write On
	WWCR Tennessee(9475)	A	Ask WWCR

## 2200 UTC/ 6pm E/3pm P - Page 54 Freqs

### NEWSCASTS (\*extended)

2200	BBCWS(am)	D	The World Today*
	R. Australia	D	News
	R. Canada Int.	M-F	The World at Six*
	Voice of Turkey	D	News
2230	R. Prague	D	News
	RVi Belgium	M-F	News

### CURRENT AFFAIRS

2200	R. Canada Int.	S/A	The World This Weekend
	R. for Peace Int.	M-F	Democracy Now!
2205	R. Australia	F	Asia Pacific
		A	Correspondents' Report
	Voice of Turkey	D	Press Review
2210	R. Australia	S-H	AM (morning news magazine)
2230	R. Canada Int.	M-F	As It Happens
2232	BBCWS(am)	A	Agenda (trends)

### MAGAZINES/FEATURES

*Thank You ...*

### Additional Contributors to This Month's Shortwave Guide:

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## Monitoring Operation Iraqi Freedom

The long awaited military action in Iraq has begun but the general consensus is that monitorable activity from the region has very disappointing for most listeners. As we predicted in the Frequency Exchange newsgroup on the *Monitoring Times* Internet Chatboard, there have not been a lot of military HF communications propagating from the Middle East. We have seen precious few posted frequencies, even from European listeners much closer to the action than the United States.

So what has been heard as of presstime? Here is a synopsis of some of the frequencies that have monitored.

The Navy has a **Tactical Support Center (TSC)** net operational on 7630 kHz in USB. Two TSC stations have been heard on this frequency working coalition P-3 aircraft operating in and around Bahrain (a detachment point for aircraft attached to the Patrol and Recon Wing 1). Look late afternoon and early evening east coast time for Bold Lady (NAF Misawa) and Keeptrack (NSF Diego Garcia).

We have seen several U.S. Army ALE nets come up. No clear voice has been monitored on any of these nets, only the ALE and data burst. All identifications are tentative.

One of these nets appears to belong to the **3rd Army Corps** and has been heard on 4780.0, 4840.0, 5203.5, 16338.5 and 25350 kHz. They were in the process of deploying to the Middle East at presstime.

BLACKJADIVCMD	2 Brigade, 1st Cavalry Division, Fort Hood, TX
CGC2V01DMAIN	Main Element
COFSC2VDIVCMD	Corps of Staff Division Command
COFSC2VDMAIN	Corps of Staff Main Element
DIVCMD	Division Command
DMAIN05DIVCMD	Main Element
DREAR07DIVCMD	Rear Detachment Element
DREAR07DM	Rear Detachment Element
DTAC06DIVCMD	Division Tactical Command Post?
DTAC06DMAIN	Division Tactical Command Post?
GARRYOWDIVCMD	Main Element
	2nd Battalion, 7th Cavalry, 3rd Brigade, 1st Cavalry Division, Fort Hood, TX
GRAN2A GRAYW	3rd Brigade, 1st Cavalry Division, Fort Hood, TX
OLDIVCMD	3rd Brigade, 1st Cavalry Division, Fort Hood, TX
GRAYWOLFMAIN	III Corps, Fort Hood, TX
IIICORPS	1st Brigade, 1st Cavalry Division, Fort Hood, TX
IRONHORDIVCMD IXD	DIVARTY, 1st Cavalry Division, Fort Hood, TX
REDTEAMDIVCMD	Engineering Brigade, 1st Cavalry Division, Fort Hood, TX
SAPPER1DOVCMD	4th Aviation Brigade, 1st Cavalry Division, Fort Hood, TX
WARRIORDIVCMD	

Other unidentified ALE addresses in this net: ABOAIN,

ABOAIN COFSSC2VDMAIN, DKHIN0DMAIN0, DLFIN05DIVCMD, DUSIN05DIVCM, GXV, LDIVCM, LUNVCM, MC2V02DIVCMD, MERCURYDIVCMD, RAVEN18DIVCMD, RENEGADDIVCMD, SC2V03DIVCMD

An apparent **Army support/logistics ALE** network has been spotted on the following frequencies: 6950.5, 7730.5, 7961.0, 9209.4, 9212.0 and 9237.0 kHz

BULLDOG	3rd Brigade, 1st Armored Division "Bulldogs"
ROSEMONTSIERRA	327th MP BN (CONF) Homebase Rosemont, IL
WAGONMASTER	Division Support Command (DISCOM) - 1st Cavalry Division

Other possibly related ALE Addresses: BRICKYARD, CONSEQUENCE, CONSEQUENCEFWD, DOCTORPEPPER72, FOXCREEK, FOXCREEKMAIN, GLENECHOSIERRA, LINEBACKER, MAJORLEAGUE11, MAJORLEAGUESIERRA, NOWR1LLFWD, ROADRUNNER, SNOWBALL, SNOWBALL LNO, SNOWBALL SJC, SNOWBALLFWD, STANTONTOWN, VOCAL

There was one report that 7390.0 kHz USB might be a frequency being used by the **USS Constellation Battle Group**. One of the callsigns monitored here was "Bonecrusher."

As more information becomes available we will pass it along here and late breaking information can be found on our *MT* Chatboard newsgroups (<http://www.monitoringtimes.com>).

### U.S. Air Force HFRB Broadcasts

Many years ago when I was still writing the *Ute World* column here in *Monitoring Times* (*BH-before Hugh*), I wrote a column with the first detailed description of an extensive military HF RTTY/Facsimile weather broadcast system known as U.S. Air Force HFRB (High Frequency Regional Broadcast). That system is still in operation, but details about stations and frequencies have not been updated in some time. So here is another *MT* exclusive – the latest information on the USAF HFRB network.

Elkhorn, Nebraska	3231.0 5096.0 6904.0 10567.0 11120.0 15681.0
	19325.0
Isabella, Puerto Rico	3394.0 4855.0 7398.0 7870.0 10997.0 11622.0
	15781.0 19363.0
Guam	4493.0 6919.0 7708.0 13385.0 14397.0 17526.0
	29380.0

These transmissions consist of 75 baud RTTY and 120-rpm drum rotation/576 IOC Facsimile broadcast on each of the sidebands (upper/lower). Listeners around the world can monitor weather info from the military with simple

radio equipment. This information is from open sources and valid as of June 2001.

### Armed Forces Day 2003

On one weekend each year, thousands of radio amateur operators and radio listeners worldwide have an opportunity to contact/monitor U.S. military communications stations in the HF (High Frequency) spectrum. It is an event eagerly anticipated by the entire radio hobby community.

Known as the Armed Forces Day Communications Test, this event, now in its 53rd year, features a traditional military-to-amateur cross-band communications test plus the Secretary of Defense message receiving test. These tests give amateur radio operators and shortwave listeners alike an opportunity to demonstrate their individual technical skills and receive recognition from the Secretary of Defense or the appropriate military radio station for their proven expertise.

The annual cross band event will take place this year during the weekend of 10-11 May 2003. Although Armed Forces Day will be celebrated on Saturday, May 17, 2003, the Armed Forces Day military/amateur crossband communications test is being conducted one week earlier this year. This is being done to avoid a conflict with the annual Dayton Hamvention scheduled for 16-18 May 2003, the same weekend as the actual Armed Forces Day celebration.

A complete list of stations participating in the test, times, frequencies and modes are presented below. It should be noted that some stations indicated may not operate the entire period shown depending on propagation and manning. Please note that all times below are in UTC (the military Zulu time zone) and frequencies are presented in kilohertz (kHz).

The modes available for contacts include operations in single sideband voice (SSB), both upper and lower sideband, and the following digital modes: RTTY, PACTOR FEC, AMTOR FEC, CLOVER and MT63.

Participating military stations will transmit on the indicated MARS (Military Affiliate Radio Service) frequencies and will listen for amateur radio stations in the ham bands indicated. The military station operator will announce the specific amateur band frequency or range being monitored on-the-air. Hams should limit the duration of each contact to 3 minutes. Stations marked with an asterisk will also broadcast the special Secretary of Defense Armed Forces Day message using digital modes.

For the QSL collector, cards will be provided to those making contact with the military stations. Special commemorative certificates will also be awarded to anyone who receives and accurately copies the digital Armed Forces Day message from the Secretary of Defense.

## Participating Stations and Schedules

### Acronyms:

AFB	Air Force Base
LSB	Lower Sideband
MARS	Military Affiliate Radio System
NAVMARCORMARS	Navy-Marine Corps MARS
RTTY	Radioteletype
USACE	U.S. Army Corps of Engineers
USAF	US Air Force
USB	Upper Sideband
USCG	U.S. Coast Guard

### U.S. ARMY MARS

AAZ – Headquarters, Army MARS and Western Area Gateway, Fort Huachuca, Arizona  
Operating Schedule: 1300 10 May - 0200 11 May  
Address: CDR NETCOM/9TH ASC, Attn: NETCOM-OPE-MA (MARS) (31), 2133 Cushing Street, Ft. Huachuca, AZ 85616-7070

Freq	Ham Band	Mode
4038.0	80-meters	LSB
6913.0	40-meters	LSB
7424.0	40-meters	LSB
13910.5	20-meters	USB
13993.0	20-meters	USB
21824.0	15-meters	USB
27788.5	15-meters	USB

### WAR – Fort Detrick, Maryland

Operating Schedule: 1200-2330 10 May  
Address: Commander, 1110th Signal Battalion, 1671 Nelson St, Attn: MARS Station Bldg 1678, Ft. Detrick, MD 21702

Freq	Ham Band	Mode
4020.0	80-meters	LSB
6910.0	40-meters	LSB
7363.0	40-meters	LSB
13512.5	20-meters	USB
14928.5	20-meters	USB
20518.5	15-meters	USB

### WUG-231 – Memphis, Tennessee

Operating Schedule: 1300 10 May - 0300 11 May  
Address: USACE Memphis District Office, Attn: Jim Pogue, Public Affairs Office Room B-202, 167 North Main Street, Memphis, TN 38103-1894

Freq	Ham Band	Mode
4032.0	80-meters	LSB
6826.0	40-meters	LSB
14484.0	20-meters	USB
14663.5	20-meters	USB
20973.5	15-meters	USB

### U.S. AIR FORCE MARS

AIR – Andrews AFB, Maryland  
Operating Schedule: 1200 - 2400 10 May  
Address: USAF MARS Station, 789<sup>th</sup> Communications Squadron (789 CS/SCP), 1558 Alabama Avenue, Suite 67, Andrews AFB, MD 20672-6116

Freq	Ham Band	Mode
4026.5	80-meters	LSB
6894.5	40-meters	USB
7316.5	40-meters	LSB
13985.0	20-meters	USB
13996.0	20-meters	USB

### AIR-2 – Las Vegas, Nevada (AGA6NE)

Operating Schedule: 1500 10 May - 0300 11 May  
Address: USAF MARS Station, Nellis AFB, Nevada

Freq	Ham Band	Mode
4488.5	80-meters	USB
6994.5	40-meters	USB
13983.5	20-meters	USB
14387.5	20-meters	USB
27983.5	10-meters	USB

### AIR-3 – Hilo, Hawaii

Operating Schedule: 18000 10 May - 0600 11 May  
Address: Major Harvey Motomura, HIANG, 291 CBCS, Hilo, HI

Freq	Ham Band	Mode
4023.5	80-meter	USB
7358.5	40-meter	USB

14528.5	20-meters	USB
20873.0	15-meters	USB

### U.S. NAVY-MARINE CORPS MARS

NAV – Headquarters, NAVMARCORMARS Radio Station, Washington, DC  
Operating Schedule: 1200 10 May - 0400 11 May  
Address: HQ NAVMARCORMARS Radio Station, Cheatham Annex Building 117, 118 Sanda Avenue, Williamsburg, VA 23185-5830

Freq	Ham Band	Mode
4010.0	80-meters	LSB
7348.0	40-meters	LSB
14478.5	20-meters	USB
20994.0	15-meters	USB

### NAV-4 – NAVMARCORMARS Radio Station, Great Lakes, Illinois

Operating Schedule: 1200 10 May - 0400 11 May  
Address: NAVMARCORMARS Radio Station, 615 Preble Ave, Camp Barry Bldg 153, Great Lakes, IL 60088-2850

Freq	Ham Band	Mode
4011.5	80-meters	LSB
7376.5	40-meters	LSB
14467.0	20-meters	USB
21758.5	15-meters	USB

### NBL – NAVMARCORMARS Radio Station, Groton, Connecticut

Operating Schedule: 1200 10 May - 0400 11 May  
Address: NAVMARCORMARS Radio Station, PO Box 161 Naval Submarine Base, Groton, CT 06349-5161

Freq	Ham Band	Mode
4041.5	80-meters	LSB
7371.5	40-meters	LSB
14391.5	20-meters	USB
20623.5	15-meters	USB

### NMH – U.S. Coast Guard Telecommunication and Information Systems Command, Alexandria, Virginia

Operating Schedule: 1200 10 May - 0400 11 May  
Address: USCG Radio Station NMH, USCG-TISCOM, MARS Building, 7323 Telegraph Rd, Alexandria, VA 22315

Freq	Ham Band	Mode
4016.5	80-meters	LSB
7366.5	40-meters	LSB
14470.0	20-meters	USB
20678.5	15-meters	USB

### NPL – NAVMARCORMARS Radio Station, San Diego, California

Operating Schedule: 1200 10 May - 0400 11 May  
Address: NAVMARCORMARS Radio Station, 937 North Harbor Dr, San Diego, CA 92132-5100

Freq	Ham Band	Mode
4003.0	80-meters	LSB
7351.5	40-meters	LSB
14463.5	20-meters	USB
20936.0	15-meters	USB

### NUW – NAVMARCORMARS Radio Station, NAS Whidbey Island, Washington

Operating Schedule: 1200 10 May - 0400 13 May  
Address: NAVMARCORMARS Radio Station, 260 West Pioneer FSC Building, NAS Whidbey Island, WA 98277

Freq	Ham Band	Mode
4044.0	80-meters	LSB
7381.5	40-meters	LSB
13528.5	20-meters	USB
20952.5	15-meters	USB

### NNNOKID – Prairieville, Louisiana

Operating Schedule: 1200 10 May - 0400 11 May  
Address: NAVMARCORMARS Radio Station NNNOKID, c/o Mr. Benson Owens, 1642 Cortez Avenue, Prairieville, LA 70769

Freq	Ham Band	Mode
4014.0	80-meters	LSB
7394.5	40-meters	LSB
13974.0	20-meters	USB
20997.0	15-meters	USB

## Secretary of Defense Test Message via Digital Modes

The Secretary of Defense message will be transmitted from the stations below on the indicated frequencies, modes, and dates. All frequencies are listed for center of intelligence. Offset as appropriate for your TNC. (Note:

Not all stations may necessarily operate on all the frequencies listed, depending on propagation and available equipment.)

AAZ – 6988.0/24761.5 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	11 May/0230
PACTOR FEC	11 May/0310
CLOVER	11 May/0340

NAV – 7346.5/14480.0 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	10 May/2340
AMTOR FEC	11 May/0010
MT63	11 May/0040

NAV-4 – 7375.0/14468.5 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	11 May/0240
AMTOR FEC	11 May/0310
MT63	11 May/0340

NBL – 7370.0/14393.0 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	10 May/2340
PACTOR FEC	11 May/0010
AMTOR FEC	11 May/0040

NMH – 7365.0/14471.5 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	10 May/2340
PACTOR FEC	11 May/0010
AMTOR FEC	11 May/0040

NPL – 7350.0/14465.0 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	11 May/0240
PACTOR FEC	11 May/0310
AMTOR FEC	11 May/0340

NUW – 7380.0/13530.0 kHz	
Mode	Broadcast Date/Time (UTC)
RTTY	11 May/0240
PACTOR FEC	11 May/0310
AMTOR FEC	11 May/0340

WAR – 6988.0/14440.0 kHz	
Mode	Broadcast Date/Time (UTC)
PACTOR	10 May/2340
RTTY (Note 1)	11 May/0010
CLOVER	11 May/0040
Note 1:	170 Hz shift at 45 baud.

## Submission of Test Message Entries

Transcripts of the digital mode receive test message should be submitted as received. No attempt should be made to correct possible transmission errors. Provide time, frequency and call sign of the military station copied, including name, call sign, and address (including ZIP code) of individual submitting the entry. Ensure this information is placed on the paper containing the test message. Each year a large number of acceptable entries are received with insufficient information, or necessary information was attached to the transcripts and was separated, thereby precluding issuance of a certificate. Entries must be sent to the following military address:

### Stations copying AAZ or WAR broadcasts:

Armed Forces Day Celebration, CDR NETCOM/9TH ASC, Attn: NETCOM-OPE-MA (MARS) (31), 2133 Cushing Street, Ft. Huachuca, AZ 85616-7070

### Stations copying NAV, NAV-4, NBL, NMH, NPL or NUW broadcasts:

Armed Forces Day Celebration, Chief, Navy-Marine Corps MARS, Cheatham Annex Building 117, 118 Sanda Avenue, Williamsburg, VA 23185-5830

So there you have it. A chance to work and QSL quite a few military radio stations nationwide. I hope to see you all in May on the ham bands as we celebrate Armed Forces Day 2003. 73 and good hunting.



# Motorola Busting Out all Over

The first few months of this year have been busy for Motorola. They've won several contracts for new digital trunked radio systems and have successfully completed the final stages of a replacement system for a county in Florida. They're also selling digital radios to the agency that is tasked to provide security at airports across the United States.

## ♦ Martin County, Florida

Martin County, Florida, is located on the Atlantic coast between Orlando and Miami and is home to more than 130,000 people. In March they officially accepted their new \$9.1 million radio system from Motorola, finally replacing a three-site Logic Trunked Radio (LTR) system that was more than ten years old. Agencies on the new system include the Martin County Sheriff's Office and the Fire/Rescue Department, the towns of Jupiter Island, Sewall's Point and Stuart as well as the Martin County School District. As many as 1,400 subscribers are using the system, with more local agencies expected to join in the future.

Messages are transmitted simultaneously ("simulcast") from four county repeater sites, located in Hobe Sound, Indiantown, Port Salerno and Stuart. Port Salerno is a new site, providing mid-county coverage that was not available with the older LTR system.

An additional selling point of the system was interoperability with other Motorola radio systems previously installed in nearby counties, specifically Palm Beach to the south and St. Lucie to the north. Public safety personnel from all three counties are now able to communicate across county boundaries and speak directly with each other without having to relay messages through a dispatcher.

Frequencies in use in the new system are 866.0375, 866.2250, 866.2625, 866.3750, 866.4125, 866.5375, 866.5625, 866.6625, 866.7875, 866.9125, 867.1750, 867.2375, 867.6375, 867.6750, 867.8875, 868.1750, 868.3250, 868.5375 and 868.5750 MHz.

Talkgroups for this system include:

Decimal	Hex	Description
48	003	Mutual Aid Calling
80	005	Mutual Aid Tactical 1
112	007	Mutual Aid Tactical 2
144	009	Mutual Aid Tactical 3
176	00B	Mutual Aid Tactical 4
208	00D	Mutual Aid Tactical 5
240	00F	Mutual Aid Tactical 6
272	011	Mutual Aid Tactical 7
304	013	Mutual Aid Tactical 8

10000	2710	Sheriff Dispatch (North)
10032	2730	Sheriff
10048	2740	Sheriff
10064	2750	Sheriff Dispatch (West)
10096	2770	Sheriff
10128	2790	Sheriff
10192	27D0	Sheriff

County Fire/Rescue has been reported on 12816 (3210 in hex) and 12848 (3230). The Stuart Police Department uses talkgroups 40016 (9C50), 40048 (9C70) and 40080 (9C90). School buses use talkgroups 6288 (1890) and 6448 (1930).

At the present time Fire/Rescue is still being transmitted on 154.010 MHz, so those listeners without digital trunk-tracking scanners should still be able to hear fire and medical rescue activity.

## ♦ Genesee County, Michigan

In March of this year, Genesee County, in the southeast corner of Michigan's Lower Peninsula, contracted with Motorola for a \$10 million SmartZone system. The 14-channel simulcast system is expected to come on-line in 2005, although the county is dependent on the construction and installation schedule for the seven planned repeater sites. Nearly 50 local police and fire departments plan to use the system to serve the county's 300,000 residents across an area of 600 square miles. Genesee County expects to purchase about 1,300 portable and mobile radios.

Since the new system will follow the APCO-25 Common Air Interface (CAI) standard, it will have the capability of interoperating with the Michigan Public Safety Communications System (MPSCS), the state-wide APCO Project 25 network that was first described in this column in the June 2000 issue.

The county plans to use pre-arranged talk groups, although in emergency situations talk groups may be changed dynamically. In such situations some channels may be dedicated to high priority groups, thus ensuring an adequate amount of communications capability.

About 30 local municipalities are already signed up to use the new county system. The cities of Flint and Fenton are considering joining as well.

## ♦ Anne Arundel County, Maryland

Anne Arundel County, Maryland,

awarded Motorola a \$12.7 million contract in March for an overhaul of their 800 MHz trunked radio system. Besides increasing interoperability, the contract provides for upgrades to the county's four existing repeater sites and the purchase of 1,100 mobile and portable digital radios. Sixteen channels will operate in simulcast mode, meaning the same information will be transmitted from the four repeaters at the same time. The system is expected to be on-line next year, covering 490,000 county residents across more than 400 square miles.

Anne Arundel currently operates a 15-year-old Motorola Type II analog system on the following frequencies: 856.3625, 856.3875, 856.4125, 857.3625, 857.3875, 857.4125, 858.3625, 858.3875, 858.4125, 859.3625, 859.3875, 859.4125, 860.3625, 860.3875 and 860.4125 MHz.

Talk Group	Hex	Description
57360	E01	Fire/Medical Dispatch
57392	E03	Medical
57424	E05	Medical
57488	E09	Fireground Operations
57520	E0B	Fireground Operations
57552	E0D	Command
57584	E0F	Mutual Aid (Simulcast on 154.280 MHz)
57616	E11	Mutual Aid
57776	E1B	Unit to Unit
57872	E21	County Police (North)
57904	E23	County Police (East)
57936	E25	County Police (West)
57968	E27	County Police (South)
58032	E2B	County Police License Information
58320	E3D	Detention Center
59120	E6F	Prisoner Transport
59728	E95	Annapolis Police Dispatch
59792	E99	Annapolis Police Tactical

## ♦ Loudoun County, Virginia

Loudoun County's Fire and Rescue Department in northern Virginia passed their one-year anniversary on the new 800 MHz digital trunked system in March, although at last report they continue to operate their old 46 MHz frequencies as dispatch-only channels.

The system was originally awarded to Motorola in December 1998. The Federal Communications Commission (FCC) finally approved system frequencies in January 2001. Construction was essentially complete in June of that year, and coverage testing began in July.

The Sheriff's Department and the police departments for the towns of Purcellville and Middleburg were the first agencies to cutover to the new system, in February of last year. County Fire Rescue moved over in March and the Leesburg Police Department followed in April. Later in the year, the county received \$4.3 million in Federal emergency preparedness funds, \$1.3 million of which was earmarked for mobile data terminals, giving law enforcement and fire department personnel on-scene access to computerized information.

The trunked system uses the following frequencies: 866.5500, 866.5875, 866.8000, 867.0375, 867.0750, 867.3250, 868.0500, 868.6625, 868.7750 and 868.9125 MHz.

Fire talkgroups include 3216 (hex 0C9), 3248 (0CB), 3280 (0CD), 3312 (0CF), 3364 (0D2), 3376 (0D3), 3408 (0D5), 3440 (0D7), 3472 (0D9), 3504 (0DB), 3536 (0DD) and 3600 (0E1).

#### ◆ Other system talkgroups:

1616	065	Sheriff Dispatch (East)
1648	067	Sheriff Dispatch (West)
2096	083	Car to Car (East)
2128	085	Car to Car (West)
2480	09B	Leesburg Police Dispatch
2512	09D	Leesburg Police Tactical
2672	0A7	Leesburg Police Car to Car

Primary dispatch is simulcast on 46.38 MHz, while fireground operations can still be heard on 46.22 and 46.32 MHz

#### ◆ Fairfax County, Virginia

Nearby Fairfax County is operating a Motorola trunked radio system with both analog and digital traffic. Eight sites cover the county with the following frequencies: 852.9625, 853.1875, 853.3375, 853.4625, 853.4875, 853.6375, 853.7875, 853.9125, 853.9625, 854.1375, 854.2625, 854.2875, 854.4625, 855.9625, 855.9875, 856.2625, 857.2625, 858.2625, 859.2625 and 860.2625 MHz.

Groups	Hex	Description
176	00B	Fairfax Fire Dispatch
208	00D	Fairfax Fire
240	00F	Fairfax Fire
272	011	Fairfax Fire
304	013	Fairfax Fireground
16016	3E9	Fairfax County Police Dispatch
16048	3EB	Fairfax County Police Tactical 1
16080	3ED	Fairfax County Police Tactical 2
16464	405	Parking Enforcement
16496	407	Criminal Justice Academy
16848	41D	Fairfax County Police Dispatch (Mount Vernon)
16944	423	Fairfax County Police Dispatch (Franconia)
17040	429	Fairfax County Police Dispatch (West Springfield)
17136	42F	Fairfax County Police Dispatch (Annondale)
17232	435	Fairfax County Police Dispatch (McLean)
17328	43B	Fairfax County Police Dispatch (Reston)

17424	441	Fairfax County Police Dispatch (Fair Oaks)
17616	44D	Fairfax County Police Dispatch (Simulcast on 460.575 MHz)
17648	44F	Fairfax County Police (Simulcast on 460.600 MHz)
17680	451	Fairfax County Police (Simulcast on 460.625 MHz)
19760	4D3	Fairfax County Sheriff Tactical 1
19792	4D5	Fairfax County Sheriff Tactical 2
20720	50F	Fairfax City Police
20880	519	Vienna Police Dispatch
20976	51F	Herndon Police Dispatch

Talkaround frequencies for fireground operations are 866.8625 and 867.7625 MHz, while police can make use of 867.2250 and 867.4750 MHz.

Last year Fairfax County received a \$12 million grant of emergency preparedness funds, half of which they are spending on three new repeater sites to improve coverage from the current eight.

#### ◆ Airports

Major airports within the United States are now protected by the Transportation Security Administration (TSA), an agency created after the terrorist attacks of September 11, 2001. The TSA appears to be using APCO Project 25 radios in the VHF and possibly UHF frequency bands.

For VHF operations, there appear to be three primary active frequencies. The first is 172.150 MHz, which is normally used in *simplex* mode. This means that each radio transmits and receives on this frequency and communicates directly with other radios.

The other two frequencies, 169.300 and 172.900 MHz, are used with a repeater. Each portable radio transmits to a repeater on 169.300 MHz, which is referred to as the *repeater input* frequency. The repeater re-

broadcasts the input signal on 172.900 MHz, which is the *repeater output* frequency.

Note that it is possible that either of the repeater frequencies may be used in simplex mode at some airports. So far, it is not clear how the frequency and mode of operation selections are made at any particular airport.

These frequencies were originally part of a larger Federal Aviation Administration (FAA) FM radio communications (RCOM) system that has been in use at airports throughout the United States. Channel assignments for the RCOM are:

Channel	Repeater Input	Repeater Output
1	169.325	172.925
2	169.350	172.950
3	169.375	172.975
4	169.250	172.850
5	169.275	172.875
6	169.300	172.900
7	169.225	172.825
8	172.125	(Simplex)
9	172.150	(Simplex)
10	172.175	(Simplex)
11	166.175	(Simplex)

When tone-controlled squelch is used, it is typically 136.5 Hz.

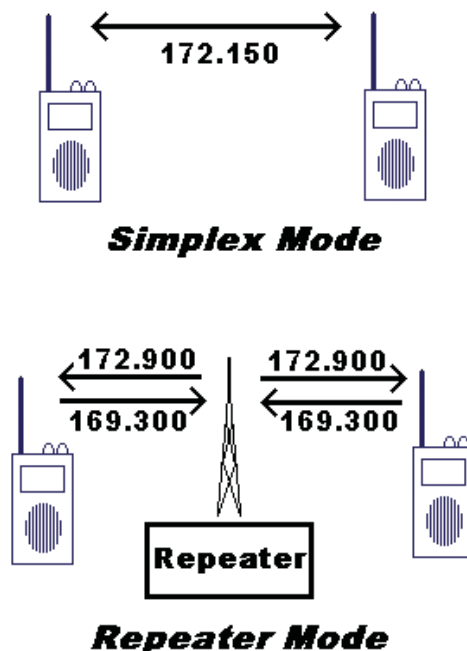
When used by the TSA, it appears that there are at least four different talkgroups on the 172.150 simplex frequency and perhaps half a dozen talkgroups for the 169.300 and 172.900 MHz repeater frequencies. So far, no encrypted traffic has been reported – everything appears to be in the clear.



#### ◆ Dayton Hamvention

If it's May, it must be time for the annual Hamvention in Dayton, Ohio. Starting Friday, May 16, and running through Sunday, May 18, thousands of amateur radio operators and electronics enthusiasts will come from around the world to Dayton's Hara Arena for three days of bargain hunting, radio-related technical sessions, and networking with like-minded friends. The Hamvention is the world's largest amateur radio gathering and is definitely worth the effort to attend. Besides the educational sessions, big-name equipment manufacturers and retailers show off their latest wares inside the arena while thousands of tailgaters sell new and used items in the parking lot outside. My personal favorite is hunting for old calculators and computers, but you can find almost any electronic-related device from the flea market vendors. Lots of fun and highly recommended!

That's all for this month. More information, including updated frequency assignments for public safety digital radio systems, is available on my web site at <http://www.signalharbor.com>. I also welcome your electronic mail to [danveeneman@monitoringtimes.com](mailto:danveeneman@monitoringtimes.com). Until next month, happy monitoring!





## U.S. Department of Homeland Security

9/11 pictures courtesy of FEMA

**S**ince the attacks on the New York and Washington on 9-11, the watch word Americans are most familiar with is "homeland security." In the aftermath of the terrorist attacks against America on September 11, 2001, President George W. Bush decided 22 previously disparate domestic agencies needed to be coordinated into one department to protect the nation against threats to the homeland.

On November 25th the President signed the bill creating the new Department of Homeland Security (DHS), and on January 24th, 2003, the new Department came into existence. On November 25th the President also submitted a Homeland Security Reorganization Plan to Congress. Ninety days after the plan was submitted, the component parts of DHS were free to move to the new Department. By law the DHS Secretary has one year from the time the Department becomes effective to bring all of the 22 agencies into the new organization. The President stated in the reorganization plan that most of the component parts moved into the new Department by March 1, 2003.

The creation of the Department of Homeland Security is the most significant transformation of the U.S. government since 1947, when Harry S. Truman merged the various branches of the U.S. Armed Forces into the Department of Defense to better coordinate the nation's defense against military threats. DHS represents a similar consolidation, both in style and substance.

The new department's first priority is to protect the nation against further terrorist attacks. Component agencies will analyze threats and intelligence, guard our borders and airports, protect our critical infrastructure, and coordinate the response of our nation for future emergencies.

Besides providing a better-coordinated defense of the homeland, DHS is also dedicated to protecting the rights of American citizens and enhancing public services, such as natural disaster assistance and citizenship services, by dedicating offices to these important missions.

Of course, any major change of this magnitude in the structure of the government has also created major changes in the landscape of the government's radio spectrum. Before we start to explore any changes to that spectrum, we need to get an overview of the new Department's organization and what agencies have been folded into it. This will help us understand what frequencies we will find DHS components operating on.

### ◆ Main Directorates of the DHS

#### Border and Transportation Security (BTS)

##### Securing Our Borders

Securing our nation's air, land, and sea borders is a difficult yet critical task. The United States has 5,525 miles of border with Canada and 1,989 miles with Mexico. Our maritime border includes 95,000 miles of shoreline, and a 3.4 million square mile exclusive economic zone. Each year, more than 500 million people cross the borders into the United States, some 330 million of whom are non-citizens.

On March 1, the Department of Homeland Security, through the Directorate of Border and Transportation Security, assumed responsibility for securing our nation's borders and transportation systems, which straddles 350 official ports of entry and connect our homeland to the rest of the world. BTS also assumed responsibility for enforcing the nation's immigration laws.

The Department's first priority is to prevent the entry of terrorists and the instruments of terrorism while simultaneously ensuring the efficient flow of lawful traffic and commerce. BTS manages and coordinates port of entry activities and lead efforts to create a border of the future that provides greater security through better intelligence, coordinated national efforts, and unprecedented international cooperation against terrorists, the instruments of terrorism, and other international threats.

To carry out its border security mission, BTS incorporates the United States Customs Service



(formerly part of the Department of Treasury), the enforcement division of the Immigration and Naturalization Service (formerly part of the Department of Justice), the Animal and Plant Health Inspection Service (formerly part of the Department of Agriculture), the Federal Law Enforcement Training Center (formerly part of the Department of Treasury) and the Transportation Security Administration (formerly part of the Department of Transportation). BTS also incorporates the Federal Protective Service (formerly part of the General Services Administration) to perform the additional function of protecting government buildings, a task closely related to the Department's infrastructure protection responsibilities.

The BTS Directorate is also responsible for securing our nation's transportation systems, which move people from our borders to anywhere in the country within hours. The recently created Transportation Security Administration has statutory responsibility for security of all of the airports. Tools it uses include intelligence, regulation, enforcement, inspection, and screening and education of carriers, passengers and shippers. The incorporation of TSA into the new Department allows the Department of Transportation to remain focused on its core mandate of ensuring that the nation has a robust and efficient transport-



tation infrastructure that keeps pace with modern technology and the nation's demographic and economic growth.

Another important function of BTS's border management mission is enforcing the nation's immigration laws – both in deterring illegal immigration and pursuing investigations when laws are broken. On March 1st BTS absorbed the enforcement units of the Immigration and Naturalization Service, such as the Border Patrol and investigative agents of INS. Working together with agents from other agencies that will comprise the BTS Directorate, such as the U.S. Customs Service and Transportation Security personnel, these trained law enforcement professionals provide a coordinated defense against unlawful entry into the United States.

### **Emergency Preparedness and Response (EPR) Preparing America**

As September 11 showed, the consequences of terrorism can be far-reaching and diverse. As part of the Department of Homeland Security, the Directorate of Emergency Preparedness and Response (EP&R) ensures that our nation is prepared for catastrophes – whether natural disasters or terrorist assaults. Not only will the Directorate coordinate with first responders, it will oversee the federal government's national response and recovery strategy.

To fulfill these missions, the Department of Homeland Security is building upon the Federal Emergency Management Agency (FEMA), which has a long and solid track record of aiding the nation's recovery from emergency situations. The EP&R Directorate will continue FEMA's efforts to reduce the loss of life and property and to protect our nation's institutions from all types of hazards through a comprehensive, risk-based emergency management program of preparedness, prevention, response, and recovery.

And it will further the evolution of the emergency management culture from one that reacts to disasters to one that proactively helps communities and citizens avoid becoming victims. In addition, the Directorate will develop and manage a national training and evaluation system to design curriculums, set standards, evaluate, and reward

performance in local, state, and federal training efforts.

The Directorate also has the lead in the DHS in response to any sort of biological or radiological attack. It will also coordinate the involvement of other federal response teams, such as the National Guard, in the event of a major incident. Building upon the successes of FEMA, DHS will lead the nation's recovery from catastrophes and help minimize the suffering and disruption caused by disasters.

### **Information Analysis and Infrastructure Protection (IAIP) Synthesizing and Disseminating Information**

IAIP merges the capability to identify and assess a broad range of intelligence information concerning threats to the homeland under one roof, issue timely warnings, and take appropriate preventive and protective action. The most visible function to the public of this Directorate will be to administer the Homeland Security Advisory System.

From a radio listener's perspective a major player within this Directorate is the management of the National Communications System (NCS). The IAIP team will provide coordination of the National Security and Emergency Preparedness (NS/EP) communications for the Federal government.

### **Science and Technology (S&T) Developing Technology**

This Directorate coordinates the Department's efforts in research and development, including preparing for and responding to the full range of terrorist threats involving weapons of mass destruction.

### **Management**

#### **Building a Team of Professionals**

This directorate of the Department of Homeland Security is responsible for budget, management and personnel issues in DHS.

### **◆ Other Agencies Folded into DHS**

Besides the five Directorates of DHS mentioned above, several other critical agencies have

folded into the new department or being newly created.

### **United States Coast Guard (USCG)**

The Commandant of the Coast Guard reports directly to the Secretary of Homeland Security. However, the USCG also works closely with the Under Secretary of Border and Transportation Security as well as maintain its existing independent identity as a military service. Upon declaration of war, or when the President so directs, the Coast Guard would operate as an element of the Department of Defense, consistent with existing law.

### **United States Secret Service (USCS)**

The primary mission of the Secret Service is the protection of the President and other government leaders, as well as security for designated national events. The Secret Service is also the primary agency responsible for protecting U.S. currency from counterfeiters and safeguarding Americans from credit card fraud.

### **Bureau of Citizenship and Immigration Services**

While BTS is responsible for enforcement of our nation's immigration laws, the Bureau of Citizenship and Immigration Services dedicates its full energies to providing efficient immigration services and easing the transition to American citizenship. The Director of Citizenship and Immigration Services reports directly to the Deputy Secretary of Homeland Security.

### **Office of State and Local Government Coordination**

A truly secure homeland requires close coordination between local, state and federal governments. This office ensures that close coordination takes place with state and local first responders, emergency services and governments.

### **Office of Private Sector Liaison**

The Office of Private Sector Liaison provides America's business community a direct line of communication to the Department of Homeland Security. The office will work directly with individual businesses and through trade associations and other non-governmental organizations to foster dialogue between the Private Sector and the Department of Homeland Security on the full range of issues and challenges faced by America's business sector in the post 9-11 world.

### **Office of Inspector General**

The Office of Inspector General serves as an independent and objective inspection, audit, and investigative body to promote effectiveness, efficiency, and economy in the Department of Homeland Security's programs and operations, and to prevent and detect fraud, abuse, mismanagement, and waste in such programs and operations.

### **◆ Monitoring the New Department**

In future editions of *MT's The Fed Files* we will cover some of the frequencies you can monitor to hear the various agencies within the new Department of Homeland Security. So until next time, 73 and good hunting.





## Whither Radio?

It's human nature to doubt – and resist – change. “That thing will never fly.” “Get a horse!” “Nobody will ever need more than 64 kilobytes of RAM.” For all our lifetimes, “radio” has meant a device that picks streams of analog signals out of the air, playing whatever the program director at the station has chosen. Most of us, me included, have assumed it will always be this way. But will it? I also assumed watching TV in Milwaukee would always involve an antenna on the roof and channels 4, 6, 10, 12, 18, and 36. Who would have ever imagined cable, not to mention over-the-air channels 7, 24, 30, 41, 49, 55, 58, 63, and 67?

In the near term, the future of radio is satellite. XM and Sirius both see automobiles as the critical battleground for listeners. One of my co-workers has XM, and swears by it. So far, the \$120/year price tag and the presence of interesting programming on WPLN-1430 and WRLT-100.1, have kept me from buying. If I spent more time on the road – in cities without interesting local stations – I'd sure be looking at one of these services.

The next step for radio will be digital broadcasts by existing stations. In the USA, this means IBOC – “In Band On Channel” – also known as “HD radio.” Tests have already begun on a number of stations, most prominently WOR-710 New York. IBOC promises to vastly improve the audio quality of existing broadcasts – arguably at the expense of massive interference. But IBOC is also designed specifically to maintain the status quo with regard to ownership and programming. It's a technical change, but not a social one. Personally, I think it's a stopgap measure.

In Canada, the international “Eureka 147” system is in use on UHF frequencies. Interference is not an issue, and the coverage of existing stations is equalized, eliminating the phenomenon of a local station that disappears at sunset. The Canadian system is technically far superior to the one planned for the USA – but listeners and buyers have been ignoring it.

Also already on the “air” is Internet “radio.” “Radio” in quotes, because for the vast majority of listeners no signal is radiated at all. As wireless Internet service becomes more popular, this will change. Already, some stations are claiming 800,000 listeners. Many of these are people trying to use an alternative method of receiving

stations they can't hear the traditional way. (Have you tried to listen to an AM station inside a metal-framed office building full of computers?!). Internet-only stations are beginning to make some headway as well.

I have to wonder whether the days of centralized radio will come to an end. The existing model of radio is based on a “dumb” receiver, which simply receives a stream of information and converts it directly to audio. Today, millions of kids are walking around with MP3 players – tiny computers which decode compressed music files and convert them to audio. It's not that much of a stretch to see a device that assembles a custom radio show. It uses a software algorithm to decide which songs you're likely to enjoy, and saves them when they're streamed from the satellite (or nearest cell site). If you ask for it, it also downloads a few DJ comments about the records you just heard – or a current traffic report – or a newscast – maybe it even gives you a credit on your next bill if you agree to listen to a few ads.

Many DXers complain that there aren't any stations that play the music they like. (Heck, that's why I became a DXer – to try to find interesting programming on stations in distant cities.) Maybe in the future, everyone will actually have the station they've always wanted...

### Bits and Pieces

✦ **Satellite radio boom box.** XM and Sirius satellite radio have started by targeting mobile listeners. “Mobile” initially meant listeners in cars – surveys suggest most radio listening happens while driving to and from work. XM has taken the next step. An item from the New York *Daily News* forwarded by Robert Thomas says a satellite “boom box” is now available for XM listeners. The XM unit itself is about the size of a wallet; it plugs into a larger unit with antenna and speakers. (See the review of the Delphi

SKYFi XM system in the March issue of *MT*.)

✦ **Music on, music off.** In the mid- and late-1970s, popular music rapidly disappeared from the AM dial. In balance, it seems to be gradually reappearing. I recently reported the switch of WSAI-1530 Cincinnati from a nostalgia format to rock oldies. On January 27, WWKB-1520 Buffalo, New York, made a similar switch. Kraig Krist KG4LAC of suburban Washington, DC, writes “I was a frequent listener to WKBW years and years ago. KB 1520 is what AM radio should be! We have too many talk, religious, and sports stations on AM. Welcome back KB!”

Unfortunately, the other major 50,000-watt station on 1520, KOMA in Oklahoma City, has made the opposite change. KOMA-1520 carried an excellent oldies format – around the beginning of February they switched to news/talk. The oldies continue on KOMA-FM (which, unfortunately, most of us will never hear...)

✦ **Experimental QSL.** Mike King K3CXG, also of Washington, has received a QSL from experimental station WD2XXM. The verification signer is E. Glynn Walden, VP of Broadcast Engineering at Ibiquity. Mike's report was sent to 8865 Stanford Boulevard, Suite 202, Columbia MD 21045. He's still looking for an address for the Lubavitcher pirate station on 1710 in New York City. (This station spontaneously verified a report printed in the National Radio Club's *DX News* but I'm not aware of any address for requesting a QSL.)

✦ **Listening in South Texas.** Barney Fontenot of San Antonio was given a DX398 for Christmas. He's interested in programming about theology and scientific/technical/“speculative” programs. (I think he means programs similar to Art Bell's.) Barney is interested in suggestions for stations to tune to for this type of programming in South Texas. He'd also appreciate suggestions for how to arrange these stations in the 398's two “pages” of memories.

Many DXers got hooked while looking for interesting programs on distant stations. What are your favorite programs on the DX Dial? Write me at 7540 Highway 64 West, Brasstown NC 28902-0098, or by email to [dougsmith@monitoringtimes.com](mailto:dougsmith@monitoringtimes.com). Good DX!



22 stations in Halifax and Ottawa will soon join 52 digital radio stations elsewhere in Canada.



## Odd Europirate Frequencies

European pirate broadcasters tend to use frequencies that are different from those used by North American pirate broadcasters. In addition to the 6200-6300 kHz band, which is always worth a check for Europirates, our readers note that some European stations have been using odd frequencies on some weekends. For instance, several *MT* readers reported the Dutch pirate **Radio Borderhunter** on 21880 kHz prior to 1700 UTC. Franz at this rock music station uses an e-mail address of [bordehunter@hotmail.com](mailto:bordehunter@hotmail.com) for correspondence.

Another Dutch Europirate, **Radio Omroep Zuid**, has been intermittently active on 21890 kHz. Yet another recently active Europirate on the odd frequency of 15774.9 kHz has been Radio Spaceshuttle International. DJ Space-walker uses [radiospaceshuttle@hotmail.com](mailto:radiospaceshuttle@hotmail.com) for correspondence on this one. So, it often pays to bandscan in odd places during the weekend when you are looking for pirate broadcasts.

### ◆ UK Government Chasing Pirate ISPs

The government of the United Kingdom has expanded its pirate radio enforcement efforts beyond the normal activities of the Radiocommunications Agency, the UK's version of the FCC. The government of the UK has also been pressuring internet service providers to remove content from their web pages that promote pirate radio stations. The RA and the UK Department of Trade and Industry threaten prosecution of internet service providers who do not comply with this order, but they also maintain that they are receiving voluntary cooperation from the ISPs.

Our mail here at *Monitoring Times* always confirms that our readers have strong opinions about the enforcement efforts of the RA and the FCC, who note continually that unlicensed pirate radio broadcasting is illegal in both the United Kingdom and the United States. It is undoubtedly true that pirate broadcasting violates laws in most countries. But, this extension of pirate radio enforcement to include the internet is a controversial move in a free country.

### ◆ Kulpsville Pirate Forum

This month we feature a photo contributed by Greg Majewski of the participants at the pirate radio forum recently held at the Winter SWL Festival in Kulpsville, PA. A large crowd contributed to a lively discussion of the pirate radio scene.



Left to right, we see Andrew Yoder of *Hobby Broadcasting magazine*, Allan Weiner of *WBCQ radio*, and George Zeller of *Monitoring Times*.

### ◆ Iraq Clandestine Info

The DXing Info web site at <http://www.dxing.info/community/viewtopic.php?t=857> on the internet has been posting updated information on rapid changes in the Iraqi broadcasting and clandestine situation. Since the conflict in the Middle East is changing on a virtually daily basis, you may want to check out this useful information resource. In addition, the valuable clandestine radio com web site at <http://www.clandestineradio.com/> remains a premier location for similar data.

### ◆ What We Are Hearing

Our readers heard all of these North American pirate broadcasters this month. Most broadcasts are found on 6950 or 6955 kHz, or on nearby frequencies. All pirates operate on a sporadic schedule, but shortwave pirate broadcasting increases noticeably on weekends and during major holiday periods.

**Big Thunder Radio-** Recent logs of this one featured piano music with a female announcer saying that their broadcast location was the East Coast. (Uses [bigthunderradio@hotmail.com](mailto:bigthunderradio@hotmail.com) e-mail)

**Blind Faith Radio-** This veteran operation has returned with rock music and talk about radio hobby issues. (Merlin)

**Captain Morgan-** The captain still usually programs rock music, with some Twilight Zone audio mixed in. (None, asks for reports on the Free Radio Network)

**Heroin Radio-** This new one obviously makes a quantum leap in drug advocacy with its ID, but the programming primarily discusses pirate radio issues, not drugs. (Belfast)

**Ironman Radio-** This rock music pirate might be associated with Sycko Radio, but their discussions of space make the station distinctive. (Belfast)

**KRMI-** Radio Michigan International has been programming rock music and complaints about winter weather. (Uses [krmi6955@yahoo.com](mailto:krmi6955@yahoo.com) e-mail)

**Lubuvitcher Radio-** Listeners on the East Coast might want to try for this unusual orthodox Jew-

ish ethnic pirate. It operates on 1710 kHz medium wave. (None)

**Partial India Radio-** Sanjay's parody of All India Radio normally focuses on discussions of pirate radio issues. (Providence)

**Puxatawnee Pothead Radio-** This new seasonal station featured coverage of the groundhog from central PA. (Belfast)

**Radio FCC-** Another pirate has stolen its identification from the Federal Communications Commission, which certainly is not responsible for the rock oldies productions on this station. (None)

**Radio Pigmeat-** This new one programs rock music from "the heart of North America." (None, requests reports to the Free Radio Network)

**Sycko Radio-** By now they are a veteran rock music pirate. Their ID is actually pronounced "Psycho." (Still None)

**United Patriot Militia Bingo-** Despite the capture of Steve Anderson from the right wing clandestine station **KSMR**, Steve's pirate parody remains on the air. (Uses [yahwehradio6925@yahoo.com](mailto:yahwehradio6925@yahoo.com) e-mail)

**Voice of Pancho Villa-** Everybody's favorite station from the Winter SWL festival in Kulpsville reappeared again this year. Listeners were startled by Pancho's sex change prior to the broadcast. (Blue Ridge Summit)

**WBZO-** This pirate dusted off its transmitter at the Winter SWL Festival in Kulpsville. It programs a mix of rock music and relays of other pirates. (Belfast)

**WHYP-** The James Brownyard memorial station usually promotes the classic medium wave station in North East, PA, with these call letters, but it also features pirate radio discussions and skits. (Providence)

**Wild Imagination Radio-** This new one was heard with rock music by several *MT* readers. Their rock music format is not unusual on the pirate bands. (None announced)

**WMOE-** Rock music and audio from the Three Stooges are the distinctive format on this one. (Belfast)

**WMPR-** Their "dance party" techno rock music is still a frequent visitor to the pirate bands, but Micro Power Radio still maintains little contact with its listeners. (None)

**Radio Free Speech-** (Belfast)

**Undercover Radio-** Dr. Benway's new station has been quite active, with rock music and commentary about other pirate stations. (Merlin)

### ◆ QSLing Pirates

Reception reports to pirate stations require three first class stamps for USA maildrops or \$2 US to foreign locations. The cash defrays postage for mail forwarding and a souvenir QSL to your mailbox. Letters go to these addresses, identified above in parentheses: PO Box 1, Belfast, NY 14711; PO Box 28413; Providence, RI 02908;

*continued on page 73*

# SATELLITE SERVICES

MT TRANSPONDER GUIDE [www.monitoringtimes.com/mtssg.html](http://www.monitoringtimes.com/mtssg.html)

All Frequencies MHz

Robert Smathers

[robertsmathers@monitoringtimes.com](mailto:robertsmathers@monitoringtimes.com)

## Loral Skynet Telstar 5

C-Band - 97 degrees West longitude

1(M)	3720	Occasional video
2(H)	3740	Nebraska Educational Television (digital) / Data Transmissions
3(M)	3760	Data Transmissions
4(H)	3780	Nebraska Educational Television (digital)
5(M)	3800	Occasional video
6(H)	3820	Occasional video
7(M)	3840	Occasional video
8(H)	3860	ABC feeds (occ)
9(M)	3880	Occasional video
10(H)	3900	Fox Network affiliate feeds (digital) / 20th Century Fox syndication (occ)
11(M)	3920	The Church of Jesus Christ of Latter-day Saints Television (digital) / BYU-TV (digital) / The Church of Jesus Christ of Latter-day Saints Radio (digital)
12(H)	3940	Occasional video
13(V)	3960	Fox Network affiliate feeds (digital) / 20th Century Fox syndication (occ)
14(H)	3980	Occasional video
15(M)	4000	Occasional video
16(H)	4020	Occasional video
17(M)	4040	SCOLA (digital) / Data Transmissions
18(H)	4060	American Forces Network (digital)
19(M)	4080	Occasional video
20(H)	4100	Occasional video
21(M)	4120	ABC Network affiliate feed - West (LEITCH)
22(H)	4140	ABC Network affiliate feed - East (LEITCH)
23(M)	4160	Occasional video
24(H)	4180	Occasional video

## Panamsat Galaxy 4R

C-Band - 99 degrees West longitude

1(H)	3720	Analog SCPC Audio Services
	1443.80	56.20 Chinese audio service
	1431.00	69.00 Occasional audio
2(M)	3740	Panamsat Galaxy 3D (digital)
3(H)	3760	Analog SCPC Audio Services / The Reformation Channel (digital)
	1402.90	57.10 Agrinet / USA Radio Network
	1402.00	58.00 Andy Thomas Radio Network
	1401.50	58.50 Occasional Audio
	1398.20	61.80 Performance Racing Network
	1396.00	64.00 Kansas Audio Reader Network
	1395.00	65.00 Occasional Audio
	1394.70	65.30 WJR-AM, Detroit, MI - talk radio
	1390.95	69.05 Occasional Audio
	1383.10	76.90 KIRO-AM Seattle, WA - news/talk
	1382.60	77.40 Soldiers Radio Network
	1382.30	77.70 Motor Racing Network (occ)
	1382.00	78.00 Occasional Audio
	1381.60	78.40 Radio Northwest Network
	1381.20	78.80 KJR-AM Seattle, WA - sports radio
4(M)	3780	WB Network / WB Domestic Television Distribution / WB International Television Distribution (digital)
5(H)	3800	KCHF-TV Santa Fe, KDAZ-AM Albuquerque, NM (digital) / Living Faith Television (digital) / Data Transmissions
6(M)	3820	WB Network / WB Domestic Television Distribution (digital)
7(H)	3840	Data Transmissions
8(M)	3860	Data Transmissions
9(H)	3880	XEW-TV Canal 2 / XHGC-TV Canal 5 / XEQ-TV Canal 9 (digital)
10(M)	3900	Occasional video
11(H)	3920	Mexican television feeds (occ) (digital)
12(M)	3940	Occasional video
13(H)	3960	Occasional video
14(M)	3980	Occasional video (digital) / Bloomberg Business TV, WBBR-AM 1130, New York City (digital)
15(H)	4000	World Harvest Television

6.48, 7.30 WHPZ-FM 96.9 Bremen, IN - 3

Pulse FM3

7.46 WHRI Americas - World Harvest Radio  
7.55 WHRI Europe - World Harvest Radio  
7.64 KWHR Asia - World Harvest Radio  
7.73 KWHR South Pacific - World Harvest Radio

7.82 WHRA Africa/Middle East - World Harvest Radio

16(M) 4020 Shepherd's Chapel Network  
17(H) 4040 Buena Vista Syndication / Buena Vista International Syndication / Carsey-Werner Syndication

18(M) 4060 Occasional video

19(H) 4080 Occasional video

20(M) 4100 Occasional video

21(H) 4120 Occasional video

22(M) 4140 Occasional video

23(H) 4160 Occasional video

24(M) 4180 Occasional video

## Panamsat Galaxy 4R

Ku-Band - 99 degrees West longitude

1(H)	11720	Data Transmissions
2(M)	11740	Data Transmissions
3(H)	11760	Occasional video
4(M)	11780	AT&T Headend in the Sky Pod 5 (digital)
5(H)	11800	AT&T Headend in the Sky Pod 6 (digital)
6(M)	11820	AT&T Headend in the Sky Pod 11 (digital)
7(H)	11840	AT&T Headend in the Sky Pod 4 (digital)
8(M)	11860	Data Transmissions
9(H)	11880	AT&T Headend in the Sky Pod 3 (digital)
10(M)	11900	AT&T Headend in the Sky Pod 2 (digital)
11(H)	11920	AT&T Headend in the Sky Pod 1 (digital)
12(M)	11940	AT&T Headend in the Sky Pod 8 (digital)
13(H)	11960	Data Transmissions
14(M)	11980	Data Transmissions
15(H)	12000	Data Transmissions
16(M)	12020	Data Transmissions
17(H)	12040	AT&T Headend in the Sky Pod 9 (digital)
18(M)	12060	AT&T Headend in the Sky Pod 10 (digital)
19(H)	12080	USPS-TV (digital)
20(M)	12100	Data Transmissions
21(H)	12120	Data Transmissions
22(M)	12140	AT&T Headend in the Sky Pod 7 (digital)
23(H)	12160	AT&T Headend in the Sky Pod 13 (digital)
24(M)	12180	Spacecom Systems (digital)

## SES Americom Americom-4

C-Band - 101 degrees West longitude

1(M)	3720	Data Transmissions / Cornerstone TV (digital) / TBN Superchannel (digital)
2(H)	3740	Data Transmissions
3(M)	3760	Data Transmissions / Daystar TV (digital)
4(H)	3780	(none)
5(M)	3800	Occasional video
6(H)	3820	(none)
7(M)	3840	Data Transmissions
8(H)	3860	Data Transmissions
9(M)	3880	Golden Eagle Broadcasting
10(H)	3900	HBO 2 - East (VC2+)
11(M)	3920	(none)
12(H)	3940	HBO 2 - West (VC2+)
13(M)	3960	Data Transmissions
14(H)	3980	NPS Fox Sports Net (digital)
15(M)	4000	Data Transmissions
16(H)	4020	NPS Fox Sports Net (digital)
17(M)	4040	MoreMax - East (VC2+)
18(H)	4060	(none)
19(M)	4080	HBO Signature - East (VC2+)
20(H)	4100	CbandNet (IP over Satellite)
21(M)	4120	Data Transmissions
22(H)	4140	(none)
23(M)	4160	Data Transmissions
24(H)	4180	Skyvision Infomercials (occ)

## SES Americom Americom-4

Ku-Band - 101 degrees West longitude

1(M)	11720	Data Transmissions
2(H)	11740	Data Transmissions
3(M)	11760	Data Transmissions
4(H)	11780	(none)
5(M)	11800	Data Transmissions
6(H)	11820	Data Transmissions / 3 Angels Broadcasting Television and Radio (digital)
7(M)	11840	Data Transmissions

8(H) 11860 TVB Jade East and West, Jade Movie World, TVBS-News, TVB7, TVB8, CCTV-4, Jade Super Channel (digital)

9(M) 11880 (none)

10(H) 11900 Data Transmissions

11(M) 11920 Data Transmissions

12(H) 11940 Data Transmissions

13(M) 11960 Data Transmissions

14(H) 11980 Data Transmissions

15(M) 12000 Data Transmissions

16(H) 12020 Data Transmissions

17(M) 12040 Data Transmissions

18(H) 12060 Hotelvision (digital)

19(M) 12080 Data Transmissions

20(H) 12100 Data Transmissions

21(M) 12120 CCTV-9, Vietnamese Public Radio, SES Americom Occasional feeds (digital)

22(H) 12140 Data Transmissions

23(M) 12160 Data Transmissions

24(H) 12180 Data Transmissions

25(M) 11535 South-American beamed transponder

26(H) 11535 South-American beamed transponder

27(M) 11655 South-American beamed transponder

28(H) 11655 South-American beamed transponder

## SES Americom Americom-1

C-Band - 103 degrees West longitude

1(H)	3720	Occasional video
2(M)	3740	Deutsche Welle Television, Deutsche Welle Radio 1, 2, 7, ERT, MegaCosmos, ERASport (digital)
3(H)	3760	Public Broadcasting Service (digital)
4(M)	3780	Fox Sports Net (digital)
5(H)	3800	Globecast Occasional feeds (digital)
6(M)	3820	Occasional video
7(H)	3840	Pax Television, Worship Network, Praise TV, Faith Television (digital)
8(M)	3860	In-Demand PPV (digital)
9(H)	3880	Occasional video
10(M)	3900	Occasional video
11(H)	3920	Univision (digital)
12(M)	3940	Wisdom Television (digital)
13(H)	3960	In-Demand PPV (digital)
14(M)	3980	In-Demand PPV (digital)
15(H)	4000	Total Living Network (digital) / Christian TV Network (digital)
16(M)	4020	Occasional video
17(H)	4040	Occasional video
18(M)	4060	Fox Sports Net (digital)
19(H)	4080	American Forces Network (digital) / Data Transmissions
20(M)	4100	MTV 2
21(H)	4120	Telefutura East, West, Mountain time zones (digital)
22(M)	4140	Occasional video
23(H)	4160	TV Games Network (VC2+)
24(M)	4180	Data Transmissions

## SES Americom Americom-1

Ku-Band - 103 degrees West longitude

1(H)	11720	Data Transmissions
2(M)	11740	Data Transmissions
3(H)	11760	NBC affiliate feeds (digital)
4(M)	11780	Data Transmissions
5(H)	11800	Data Transmissions
6(M)	11820	Data Transmissions
7(H)	11840	NBC affiliate feeds (digital)
8(M)	11860	Data Transmissions
9(H)	11880	NBC affiliate feeds (digital)
10(M)	11900	Data Transmissions
11(H)	11920	(none)
12(M)	11940	Microspace Communications (digital)
13(H)	11960	Data Transmissions
14(M)	11980	Data Transmissions
15(H)	12000	NBC feeds (digital)
16(M)	12020	Occasional video
17(H)	12040	NBC Newschannel Satellite Newsgathering (digital)
18(M)	12060	America's Collectibles Network (ACN) (digital) / Data Transmissions
19(H)	12080	NBC Newschannel (digital)
20(M)	12100	Occasional video
21(H)	12120	NBC Newschannel Satellite Newsgathering (digital)
22(M)	12140	Occasional video
23(H)	12160	NBC Newschannel Satellite Newsgathering (digital)
24(M)	12180	FedEx Business Television (digital)



## LF Ham Band Near?

The allocation of a U.S. ham band at 135.7-137.8 kHz appears to be inching closer to reality. It may even have been acted on by the time you read this. First proposed over four years ago, the new band seemed to be on the fast track for approval as recently as late 2002, but then it hit a snag. A related petition – this one for another new band at 5 MHz – raised concerns with government users over possible interference from amateurs.

Because the 5 MHz proposal was on the same docket as the 136 kHz allocation, the entire process was slowed at the FCC. Another action on the same docket (promoting amateurs to primary status in the 2400-2402 MHz band) was also affected. At last word, there has been some progress on resolving the 5 MHz concerns, and passage of the measure seems likely for spring 2003, possibly in a modified form.

Allocations at 136 kHz have already been approved by many countries, most notably in Europe, where over 25 countries have adopted the band. Russia, New Zealand, and several South American countries have also approved 136 kHz operation. Many others appear to be close to approval, or have authorized limited experimental operation by permit. These include the USA and Canada.

### Equipment Options

Assuming the band does become a reality, what will hams use for equipment? Of course, there is the time-honored approach of going homebrew. Many of the designs that have been published for the 160-190 kHz license-free band would be easily adaptable for 136 kHz use. The transmitter presented here in the June and July 1998 column, for example, would be an ideal candidate for conversion. All that would be required is a slight change in the low pass filter component values, and an appropriate change in crystal frequency. I'd like to hear from anyone who constructed this transmitter for 160-190 kHz operation, or plans to modify the design for 136 kHz use. Drop me a line at [wb2qmy@arrl.net](mailto:wb2qmy@arrl.net) for more information.

I'm told that MFJ is considering offering a 136 kHz transceiver in both kit and assembled form. This would be a huge boost to getting folks on the air. MFJ is a well-established firm that already offers many single-band solutions at economical prices. Existing commercial transceivers, such as the EXP-1750 designed by David Curry (CA), are designed primarily for 160-190 kHz use, but should be readily adaptable for 136 kHz operation. I suspect that we will see

other manufacturers offering 136 kHz transceivers in the near future. Yet another possibility would be a transverter that could be used with an existing ham transceiver to get on the band in high style. As a sage technical writing colleague used to tell me, "many things are possible."

If you're interested in following the technical developments on 136 kHz operation, I recommend checking out the *AMRAD Newsletter*, published by the Amateur Radio Research and Development Corporation. Over the past few years, AMRAD has published a large number of articles related to LF operation, with an emphasis on advanced modulation techniques that are well suited to weak signal communications. For more information, including subscription details, visit AMRAD's website at <http://www.amrad.org>.

### UK to AK on 136 kHz

The March 7th *ARRL Letter*, published by the American Radio Relay League, carried the following news of an astounding DX achievement on 136 kHz: "Reaching Alaska from the United Kingdom using just 1 W ERP is quite a feat for any band, but the Radio Society of Great Britain reports that Laurie Mayhead, G3AQC, was heard in Alaska on 136 kHz. In the early hours of February 15, he transmitted to Laurence Howell, GM4DMA/KL1X in Anchorage, and just before UK dawn at 0615 his call sign was clearly identified using software to read the signal."

"G3AQC was using QRSS – very slow CW – with a 60-second-long dit. The 7278-km distance is a transmission record for 1 W ERP on 136 kHz. Two years ago, Mayhead and Larry Kayser, VA3LK, made ham radio history when they completed the first two-way transatlantic exchange on 136 kHz, also using very slow speed CW. Last year G3AQC became the first person to span the Atlantic on 73 kHz." Howell and Mayhead credited research and preparation carried out by G3NYK, G3LDO, W3EEE and W4DEX for helping to set the new LF record.

### LF Loggings

I'd like to welcome Joe Molon (CT), KA1PPV to the *Below 500 kHz* column. Joe had always wanted to check out the LF band, and he recently constructed the AMRAD LF Converter\* that appeared in *QST* in April 2002. He reports that the converter is working very well with his Hallicrafters SX-62A receiver and an indoor 75-ft dipole. He uses a Heathkit frequency counter to determine his receive frequency with greater

precision. A sampling of Joe's loggings appears in Table 1.

I'd also like to welcome Ron Perron (MD), who used an Icom R-75 receiver and a 150-ft wire antenna to log his first LF stations in early March. Ron is primarily an SSB utilities monitor, but he decided to check out the longwaves as a change of pace to his usual activities. He's quick to admit that he is not an expert at CW, but during a late night/early morning bandscan, he managed to log the stations shown in Table 1.

\* Visit the LF section of the AMRAD website (<http://www.amrad.org>) for an errata sheet on this converter.

Table 1. LF Loggings

FREQ.	ID	LOCATION	BY
60	WWVB	Ft. Collins, CO	J.M. (CT)
216	CLB	Wilmington, NC	J.M. (CT)
257	TBY	Oxford, CT	J.M. (CT)
268	RT	New York, NY	J.M. (CT)
275	BBN	Grumman, NY	J.M. (CT)
281	HP	White Plains, NY	J.M. (CT)
323	GTN	Georgetown, VA	R.P. (MD)
332	DC	Oxon Hill, MD	R.P. (MD)
336	BDB	Melfa, VA	R.P. (MD)
342	MTN	Baltimore, MD	R.P. (MD)
355	CGE	Cambridge, MD	R.P. (MD)
363	RNB	Millville, NJ	R.P. (MD)
371	FND	Baltimore, MD	R.P. (MD)
385	GAI	Gaithersburg, MD	R.P. (MD)
385	UR	New York, NY	J.M. (CT)
400	FO	W. Hampton Bch., NY	J.M. (CT)
404	IUB	Baltimore, MD	R.P. (MD)
407	FR	Farmingdale, NY	J.M. (CT)
414	OGY	Rockaway, NY	J.M. (CT)



Springtime can bring many bargains for the LF enthusiast. This photo, taken at the Dayton Hamvention, illustrates the variety of gear that can be found at many hamfests and swap meets. This year's Dayton Hamvention will be held May 16-18. Visit <http://www.hamvention.org> for details. Happy hunting!

## The Well Rounded Radio Amateur

Something Old Uncle Skip learned early on in the radio hobby was that we are all in this together, for better or for worse. SWLs turning up their noses at Scannists, BCB DXers picking on Internet Broadcast monitors, and QRO Ops not answering CQs from QRP Ops, add up to an overall negative effect on the radio hobby in the eyes of the non-radio hobby public.

With this in mind, I started to consider how any Amateur Radio Operator could improve upon his or her service to the community and also have tons of fun by embracing a number of the other non-ham aspects of the radio hobby. I am especially thinking about the idea of being prepared to understand and deal with this rather complicated world we now live in. At the risk of saying it one more time: since September 11, 2001, the value of a well-equipped and well-rounded radio hobbyist can never again be discounted.

Let's start out by looking at our own "house" and then branch out beyond the limits of amateur radio.

### ♦ Ham Radio VHF/UHF

Since even entry level hams can now avail themselves of access to the world above 50 MHz, any ham who expects to be informed and, more importantly, useful in an emergency, will want to have access to at least 2 meter FM capability. I've talked at length in the past about how a power level in excess of the usual 5 watts that a handie-talkie can produce is essential for emergency communications. If you are already committed to a handheld unit, you can upgrade your capabilities easily and cheaply with the addition of an external amplifier and/or gain antenna. Additional capability on the 450 MHz band is also useful in most populated areas of the country. So many dual-band transceivers are on the market these days that it has become the de facto standard for FM operation.

If you haven't yet purchased your equipment for VHF/UHF operation, you may want to look into the option of extended receiver coverage. Often spanning the VHF/UHF spectrum or more, this gives the user the additional capabilities of the equivalent of a traditional public service scanner in the same box as their amateur radio rig.

### ♦ Ham Radio HF QRO

Any ham will tell you that, under all but

the most adverse conditions, 100 watts and a dipole antenna set up on the HF bands will get your signal anyplace you want it to go within the limits of normal propagation effects. This is especially true if you are able to use CW to punch through the noise. With a little judicious shopping and swapping you can get a good used all HF ham band transceiver in the neighborhood of \$200. It may not be the latest and greatest technology, but it will get you through when times get tough and all you care about is being able to run emergency traffic as opposed to fighting off 50 other folks under contest conditions.

As most of you know, I am a dedicated QRP and QRPp operator and I haven't logged a QRO contact in years. That kind of radio is fun. But just in case, I keep a 100 Watt QRO rig that can be powered from either AC line voltage or DC mobile voltage around the shack. I also keep it tuned up and checked out with a list of all relevant traffic handling and emergency frequencies taped to the top of the case.

### ♦ Ham Radio HF QRP

But what if things get really tough, power-wise? An extended blackout can put any back-up power system at a premium. Under such circumstances QRP gear really shines. My QRP station is essentially solar powered, so I can run even when the lights go out. My solar panels charge a Gel-Cel with enough juice to keep me on the air continuously for five days... much longer if I actually turn the radio off periodically. A likely scenario is that I will probably have other fish to fry during a true emergency (including figuring out how to fry fish, but that would be a column for a different kind of magazine!



*What do CB transceivers like the Uniden Pro520XL have to do with ham radio? Read on!*

Do an Internet search on QRP and you will find dozens of Web sites that show how to set up a modest QRP station. If you go the home brew route you can practically build all your gear out of a well stocked junk box.

If building is not your thing, rigs like the Yaesu FT-817 will get you on the air in style in low power mode. This particular transceiver also fulfills the need for a VHF/UHF rig and general coverage receiver, so you get all your emergency communications needs in a "one box" format.

The other advantage of a QRP station, even as a back-up unit in an emergency, is that, if you need to move out fast, the diminutive and light weight nature of most QRP gear makes it possible to stuff everything into a small sack and take it with you with a minimum of sweat (literally).

For both QRP and QRO HF station setups, emergency antennas need be no more complicated than a length of wire tossed up into a tree and managed by a small antenna tuning unit. At 100 watts the tuning units can be quite small and at QRP levels they can be built to fit into an aluminum, 38 millimeter, film canister!

### ♦ General Coverage Shortwave

I don't know about the rest of you, but I've been getting my news from shortwave radio now more than ever (and that is saying something, since I have continuously monitored the shortwave broadcast bands for over 30 years). I've owned more different general coverage receivers than I have owned cars. The wealth of information available about the world around you that can be heard directly from the geographic sources has never ceased to astound me.

It is possible to spend anything from about \$100 to several thousand dollars on a general coverage shortwave receiver. For most hams, who are not devoted SWLs as well, there are two good courses of action. First, if you are in the market for a new (or newer used) HF transceiver, know that many designs include general coverage shortwave reception as a standard feature. In most cases this is all that one would require to get on board with the news and information that can be found on the shortwave broadcast bands.

If you are already geared up in the ham world without shortwave broadcast coverage, any of the moderately priced general cover-



age portables currently on the market will serve an amateur radio operator well. Further, since these portables also cover all the HF ham bands, one of these rigs makes a great back-up receiver for any ham station. Once again, a simple length of wire is all that is needed for an antenna in emergencies. For that matter, it is often all that is needed under normal operating conditions as well.

Beyond the normal shortwave broadcasts, a great deal more information can be heard on a general coverage receiver. Business, military, government and even clandestine stations can be monitored for additional information about the world situation and how it might impact you and yours. But none of this should be a surprise to a regular reader of *Monitoring Times* magazine.

### ◆ Scanning

Owning a scanner sure has become more complicated over the last few years. Advances in operation, especially trunking and digital communications modes, mean that the days of the "one size fits all" scanner are receding into the rear view mirrors on the radio hobby road. Still, in all, in spite of the extra homework that must be done before buying a scanning receiver and the extra work it may take to program the rig, nothing does a better job in giving you as much up-to-the-minute information about your immediate area.

Given the current world situation and its impact on our daily lives, I personally have trouble understanding why everyone doesn't own a scanner. Within the pages granted to me by *MT*, however, I am only given the responsibility of browbeating the ham segment of the radio hobby. In other words, if you don't have a scanner covering your local public service frequencies in your ham shack and you invite Old Uncle Skip over for a chin wag, you're going to hear about it big time! Fair warning given.

Not only will the ability to monitor your local public service frequencies make you a much more useful member of an ARES or RACES emergency response unit, the ability to follow what is happening on the aircraft, business, industrial, maritime and even military frequencies in your area can be invaluable in any emergency situation. It need be nothing more complicated than a handheld unit, unless you want to get serious about the monitoring of VHF/UHF frequencies. As for antennas, the attached "duckie" will cover most of what you need to hear. Simply getting up to the second or third floor with that same antenna will make a difference, as these radios benefit from increasing the "line of sight" more than almost any other factor you can reasonably control.

### ◆ Family Service Radios

While I've tried very hard, I simply cannot convince every member of my family and every friend and neighbor to get their ham license. It probably explains why so many of them run in the other direction when they see me coming with a handie-talkie in my hand.

However, I have been able to thaw a few folks out to the practical aspects of radio by way of the many inexpensive FRS handhelds that are currently on the market and on sale almost everywhere. Lately my local shopping mall is awash with people talking to one another as they go about their shopping, no longer bound to follow their significant other into some store that will only bring embarrassment.

These little rigs can be very useful when dealing with neighborhood emergencies. We recently used a number of these radios while tracking down a lost pet with great success. They make nice tools for neighborhood watch groups. Maybe most importantly, they can be used to give reassurance and contact to a frightened child or an elderly person in an emergency.

### ◆ FM/MW BCB DXing

Taking a few minutes to figure out how to use your common, garden variety AM/FM receiver to hear stations at some distance from your local signals can be invaluable if local weather conditions knock out area services. No emergency preparedness kit should be without a good standard broadcast band portable and extra batteries. Better yet, get yourself a radio with a wind-up generator built in, such as those made by Baygen Freeplay and others.

### ◆ Citizens Band Radio

Yes, CB radio is still around and it is even still used by people other than long haul truckers. The REACT organization is still in business (<http://www.reactintl.org/>) and would be glad to have you as part of their group. More than a few hams found their way into amateur radio by way of CB. Here's your chance to make a few converts.

Take some time to become a well rounded radio hobbyist and you will invariably become a much better ham. Have fun! I'll see you on the bottom end of 40 meters.

### Outer Limits continued from page 69

PO Box 293, Merlin, Ontario N0P 1W0, Canada; PO Box 109, and Blue Ridge Summit, PA 17214.. Some pirates prefer e-mail, bulletin logs or internet web site reports instead of snail mail correspondence. The best bulletins for sending pirate loggings with a hope that pirates might QSL them remain *The ACE* (\$2 US for sample copies via the Belfast address above) and the e-mailed *Free Radio Weekly* newsletter, still free to contributors via [niel@jcan.net](mailto:niel@jcan.net). The Free Radio Network web site, another outstanding source of content about pirate radio, is found at <http://www.frn.net> on the internet.

### ◆ Thanks

Your loggings and news are always welcome via 7540 Highway 64 W, Brasstown, NC 28902, or via the e-mail address atop the column. We thank this month's valuable contributors: John T. Arthur, Belfast, NY; Scott R. Barbour Jr., Intervale, NH; Artie Bigley, Columbus, OH; Jerry Berg, Lexington, MA; Jerry Coatsworth, Merlin, Ontario; Ross Comeau, Andover, MA; Gerry Dexter, Lake Geneva, WI; Brian Duddy, Valley Cottage, NY; John Duma, Carteret, NJ; Rudy Elsen, Castro Valley, CA; Harold Frodge, Midland, MI; William Hassig, Mount Prospect, IL; Jeffrey Hodgins Virginia Beach, VA; Chris Lobdell, Stoneham, MA; Greg Majewski, Oakdale, CT; Ira Paul, Royal Oak, MI; Mark Morgan, Cincinnati, OH; Craig Pradarelli, Milwaukee, WI; Tom Poston, Florence, SC; Mike Prindle, New Suffolk, NY; Lee Reynolds, Lempster, NH; Martin Schoech, Merseburg, Germany; John Sedlacek, Omaha, NE; Lee Silvi, Mentor, OH; Gael Van Weyenbergh, Brussels, Belgium; Richard Weil, St. Paul, MN; and Niel Wolfish, Toronto, Ontario.

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#### Oregon QSO Party

May 10, 1400Z - May 11, 0200Z

#### FISTS Spring Sprint

May 10, 1700Z - May 10, 2100Z

#### CQ WW WPX Contest (CW)

May 24, 0000Z - May 25, 2400Z

#### QRP ARCI Hoot Owl Sprint

May 25, 2000 - 2400 Local Time

#### MI QRP Memorial Day CW Sprint

May 26, 2300Z - May 27, 0300Z

## Effects of Earth on Radio Signals

### Antenna Patterns and Propagation

The earth near most antennas has a very pronounced effect on the patterning of radio waves as they are launched or received by the antenna. Sometimes we don't realize this because textbooks frequently show and discuss antenna radiation and recaption (R&R) patterns as if there were nothing near the antenna but empty space.

On the other hand, an antenna is never immersed in empty space. Even for antennas on space vehicles, the vehicle itself is near the antenna and affects the antenna's patterning. And the antennas we utilize here on earth – even those a wavelength and more above earth – can have their patterns significantly modified by interaction of their electromagnetic (EM) fields with the earth's surface, and also with objects such as buildings, vehicles, hills, and other nearby objects.

For skip communication, the surface of the earth at thousands of miles from the antenna also has an important effect on propagation as the signal skips from earth to ionosphere to earth. Even when there is a direct path between the transmitting and receiving antennas, interaction of these signals with ground-reflected signals can cause significant variations in signal strength (Fresnel zones).

### Losses and Reflections

The effect of earth on an antenna's functioning is not just in altering the shape of the antenna's pattern. Earth (and also both fresh and salt water) causes RF energy loss. Earth tends to be a relatively poor conductor. For many antennas, the near portion of the antenna's electromagnetic fields

directs some of that antenna's RF energy into the earth. Some of this RF energy induces electrical currents which only heat the earth, and are lost to the radio communication process.

Not all the RF energy reaching the earth is converted to heat; some of it is reflected back away from the earth. The design of some antennas incorporates this reflected energy to combine with the antenna's other emitted energy and helps determine the shape and strength of the antenna's R&R pattern. Generally it is desirable to minimize the losses and to maximize the reflection. This minimizing and maximizing can be facilitated by increasing the conductivity of the earth.

Earth conductivity ranges from very good for salt water, to good for fresh water, decent for loamy soil in areas with lots of vegetation, to poor for dry and rocky soil. It is even worse in cities. Poor conductivity can be improved by wetting the earth, particularly with salt water. Another approach to creating better conductivity in the earth is to put metal conductors in or on the surface of the earth under or around the antenna. This can be done in various ways as discussed below.

### True Ground

Interestingly enough, RF energy which reflects from the earth doesn't necessarily reflect right at the earth's surface. If we could see radio waves encounter the earth, we would observe, in many situations, that the energy went *below* the earth's surface some distance before reflecting back upwards. The depth to which the RF energy goes before being reflected upwards is known as "radio ground," "electrical ground," or "true ground."

The depth of true ground varies with wavelength, and for different kinds of earth. Longer waves penetrate deeper. For salt water true ground is very near the earth's surface, but for dry, rocky ground it may be many feet below the earth's surface.

### Artificial Grounds

In installations where the earth has poor conductivity a counterpoise may provide a useful "ground connection." A counterpoise can be a length of wire, a set of wires radiating from a center connection like spokes of a wheel (radials), or a wire screen. A counterpoise is located under the antenna and somewhat above the earth to provide capacity coupling to the earth. Ground plane antennas have radials which, if the antenna is rather near the earth, function as a counterpoise. If the ground plane is far from earth, they have little capacity to earth and are not really a counterpoise.

Some antenna installations which typically would have an earth-ground connection are so far from the earth that the length of wire necessary to reach the ground would act as much like an antenna as like a ground. During transmitting at these installations, the operator may get tingling RF "shocks" or even RF burns from the transmitter's metal case, the microphone, or from other conducting parts which should be grounded. One solution to this problem is to connect a wire (fig. 1A) which is a quarter wavelength long (at the transmitter's operating frequency) to the transmitter's ground terminal. Note that this wire is called a "radial," but it is connected at the transmitter, and not at the antenna as with antenna radials.

The radial just mentioned substitutes, in a sense, for an earth ground connection. For this reason it is sometimes referred to as an "artificial ground."

At least one manufacturer (MFJ Enterprises) produces a device which is also called an "artificial ground." See it at <http://www.sgeworld.com/Newsletter/Jan03/RadialsCounterpoises.html>. This device is similar to a series-tuned antenna tuner (fig. 1B). In combination with a random length of wire this series circuit can be tuned to simulate a quarterwave radial. If the far end of the wire is connected to the earth the tuner-and-wire can be tuned to resonance to produce a low-impedance connection to the far-away earth.

### Radials, Radials, Radials

What is meant by the term "radial" is not

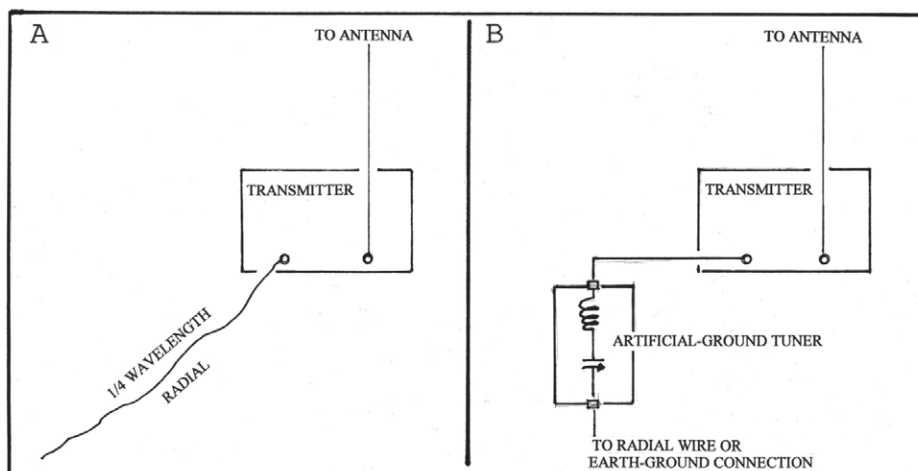


Fig. 1. An artificial-ground radial (A), and an artificial-ground tuner (B).



#### This Month's Interesting Antenna-Related Web site:

There are actually several different kinds of ground connections; check them out at: <http://www.cebik.com/gp1.html>  
For an interesting discussion about radials and counterpoises, visit: <http://www.sgcworld.com/Newsletter/Jan03/RadialsCounterpoises.html>

always clear. Radials on the well-known ground plane-antenna design serve a different function than do the buried radials typically used with grounded, vertical antennas. Buried radials do reflect some of the earth-bound energy back from the earth; they also collect and return RF energy to the antenna system. Both of these functions minimize energy loss in the earth's resistance. Buried radials do not support resonance in their antenna, and their length does not significantly affect their antenna's resonant frequency.

On the other hand, radials on a ground plane antenna are not buried in the earth, but are well above ground, and may function partly like a counterpoise as mentioned above. Also their length, about a quarter wavelength, is essential in supporting resonance in their antenna.

With the radial method of reducing RF-shock hazard, as well as with the artificial-ground tuner, the radial or ground wire will radiate, and, unintentionally, become part of the overall antenna system. However, if the radial or ground wire is a few wavelengths from the antenna, its effect on the antenna pattern should be minimal. And that beats getting shocked!

#### ◆ Does an Antenna Need a Ground?

Obviously some antennas do not need an actual ground connection; if they did, our hand-held radio antennas, and space vehicle antennas would not perform. There are many antenna designs which require no ground connection to function properly (e.g., the centerfed, halfwave dipole, the cubical quad and other loop antennas). On the other hand, it is essential to have a good RF ground connection for some antennas, such as the grounded verticals.

Common usage sometimes uses the term "ground" in referring to the common electrical return connection, such as a radio's metal chassis, or to the common negative connections on a printed-circuit board. The outer shell of a coaxial cable feedline is sometimes thought of as a "ground" connection. This terminology is inherited from earlier days when a radio's chassis was almost always connected to an earth ground. As a result, anything connected to this chassis (such as a coax connector outer shell) was thought of as a grounded connection. It is important to understand that some such "grounds" are often not, and some *should* not be connected to an earth ground.

dipole cut for 150 MHz on top of a hill, but we never connect anything to it! It is just a half-wave-length long piece of aluminum tubing on a wooden pole at the top of the hill. Have we totally wasted our time and material, or could this possibly be of some use to us in our radio communications? Hint: say that we live in a small valley below the hill, and a 150 MHz radio station we want to monitor is on the other side of the hill from us."

Well, consider that the dipole will intercept signals from that 150 MHz station we want to monitor. As there is no load to take power from the dipole it will re-radiate a significant amount of the RF power which it receives. Our antennas in the valley where we live are shielded from the signals of the 150 MHz station by the intervening hill, but not from the re-radiation of the signals from the dipole at the top of the hill. If sufficient power is received and re-radiated by the dipole, then we will be able to receive the desired station, even though it is blocked from us by the hill. In this case the dipole would be what is called a "passive repeater."

#### This Month:

If RF is dissipated in the earth and water as heat, then why is it that underground antennas are sometimes used with good results, and even submerged submarines can receive radio signals?

You'll find an answer to this month's riddle, another riddle, an antenna-related web site or so, and much more, in next month's issue of *Monitoring Times*. 'Til then Peace, DX, and 73.



#### Last Month:

I said, "Let's say that we put a halfwave

## Turn THIS



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## Wrapping up the Zenith 6S229 Project

**T**his series of restoration articles began in the November 2002 issue. It featured a Zenith “black dial” tombstone model (6S229) deliberately selected for its poor condition and sorry looks. My intention was to show how a such a radio can often be restored to perfect working condition and decent appearance – in the process providing the restorer with an interesting challenge. The series was continued each month through the March 2003 issue, during which the electrical and mechanical restoration was completed and the set was realigned to factory specifications.

Last month we turned to a different subject because I hadn’t yet completed the last steps in the process: finding a replacement dial glass and carrying out some necessary repairs to the cabinet. But this month, I’m ready to report on the wrap-up.

### ◆ Replacing the Dial Glass

The 6-7/8" convex glass to cover the dial face was ordered from the clock parts catalogue of S. LaRose Co. (<http://www.slarose.com>).

This company stocks glasses in 1/16-inch increments over a wide range of sizes. Cost was just a few dollars plus a reasonable shipping and handling fee. The glass arrived quite promptly and was nicely packed.

Speaking of suppliers, let me digress a bit and give you an update on a replacement capacitor source I had previously recommended (January issue). Soon after I made the recommendation, I learned that my source (Everett Hoard of Frontier Capacitor) had discontinued mail order capacitor sales. I had done business with Everett for years and I’ll miss him. When I find another reliable supplier for these all-important parts I’ll be sure to make another recommendation.

I had been advised that standard clock dial

glasses don’t work well as radio replacements. Something about the curve of the glass being too deep. However, the curve of the LaRose glass was fairly flat and the part slipped in perfectly. I made a test installation of the radio in its cabinet just to be sure, and found that the glass met the cabinet’s metal dial bezel ring just perfectly.

The dial glass is held on the Zenith’s dial face by two metal clips. Only one of these had survived; the other was represented only by its empty mounting hole. I’m sure that a clever metal worker could have bent up and drilled a replacement clip – but frankly that’s not one of my skills. Taking the coward’s way out, I made use of that indispensable restoration tool “Automotive Goop.” Regular readers will remember that I used it to install successfully the very warped dial scale over the dial pan (March Issue).

All I had to do in this case was to lay a thin 1/4"-long bead of “Goop” on the dial pan at the former location of the clip and a similar bead at the matching location on the dial glass. The stuff works like a heavy-duty contact cement, so it was necessary to allow the two beads to set for a few minutes before placing the glass in contact with the pan. Even so, the parts did not grip instantaneously as one might have expected. It was necessary to lightly clamp them together for a short time to ensure a strong bond. The glass is now nicely held in place with one clamp and the small dollop of “Goop.”

### ◆ Cabinet Problems

Initially, the cabinet presented an appearance about as discouraging as the radio chassis. Of course it had been stored in the same unfriendly atmosphere and was just as filthy. Its walnut finish was pock-marked with nicks and abrasions that exposed an underlying light-colored primer. The top of the cabinet was particularly bad. Most of the finish was badly deteriorated and there was a nasty black ring where a can of something or other had rested for a long, long time.

At one of the rear corners, the side of the cabinet had separated from the base. A nail had been driven through the side in a crude repair attempt. The upper and lower plies at the rear end of the base had lifted, and part of



*Left rear corner of cabinet was “sprung;” the upper and lower plies of the base had separated and part of the upper one had broken off; each of the rubber shock absorber pads had degraded into a gooey mess.*

the upper ply had splintered off. The four rubber cushions, meant to isolate the radio from vibration, still rested in the round recesses surrounding the chassis mounting screw holes, but they had deteriorated into a tarry liquid that, over time, had hardened into a glassy-topped ooze that would have to be pried and scraped out.

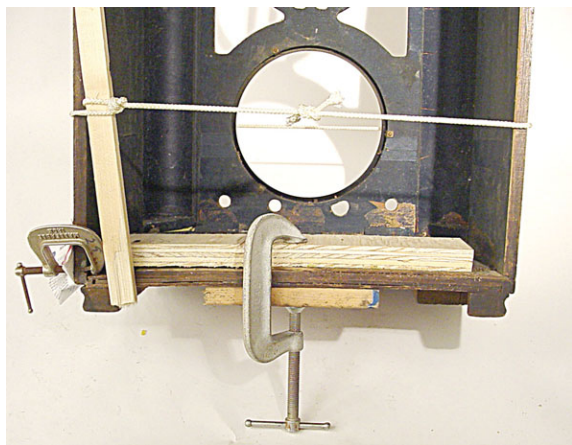
Back in the days when I first began to restore radios, I’m sure my first step would have been to get out the stripper and remove the finish from the entire cabinet. But I am smarter now. It was obvious that the ostensibly walnut finish, a bold, mottled combination of lights and darks, didn’t look like any wood grain invented by Mother Nature. It had been applied by some artificial technique – probably photographic – that I couldn’t possibly hope to duplicate. Stripping it off would leave a featureless wood cabinet – possibly a gumwood with no grain at all. My best efforts at refinishing the result would have looked like an amateurish stopgap measure.

However, the top surface didn’t seem to have been finished in the same way and showed what look like a normal grain pattern. Furthermore, the top wasn’t in a continuous piece with the sides and front; it was a separate panel that could be treated separately from the rest of the cabinet. I decided to refinish *only* the top. The finish on the sides and front, where not pockmarked or abraded, actually didn’t look too bad.



*The finish on the top panel of the cabinet was particularly bad.*





*After spreading glue, the separated corner and loose plies were pulled together by a makeshift rope "tourniquet" and a couple of blocks and clamps.*

### ◆ Going to Work on the Cabinet

I began by removing the speaker grille cloth (luckily, still in decent shape) on its cardboard frame. This required only removing the three nuts that held the speaker mounting screws in place and prying out a couple of staples. Now I wouldn't have to worry about messing it up as I cleaned and spot-stained the cabinet. Next I scrubbed the cabinet inside and out, paying special attention to the nasty grime that had accumulated in corners and crevices. Also, the remains of the deteriorated rubber cushions were pried and scraped out.

After pulling out the nail that had been intended as a repair for the sprung side, I had to remove a lot of splintered wood that was in the way of reseating the side on the base. I'm not equipped with large woodworking clamps. But I rigged a rope "tourniquet" that encircled the cabinet. Once tightened, using a short scrap of wood as a handle to twist the rope, this contraption would pull the side back into place. Before tightening, I loaded up both sides of the joint with Elmer's glue. Everything worked as planned, though in the end I had to add a small clamp to pull a vagrant piece of loose veneer back into the joint.



*The reassembled radio is ready to grace a display shelf.*

With the "tourniquet" in place, I spread glue under the loose plies at the top and bottom surfaces of the base and rigged another clamp and a pair of wood blocks to sandwich them, firmly pressing everything together. I made no attempt to replace the splintered-off ply at the rear top surface of the base, since little of this would be visible after the radio chassis was mounted in the cabinet. After several hours, the rope and clamps were removed – leaving all of the reglued surfaces fixed firmly in place.

I spread a jelly-type paint/varnish remover over the top panel of the cabinet to loosen what remained of the finish (the surfaces surrounding the panel were protected with masking tape). After the remover had remained on the surface for about an hour, I was able, easily, to scrape the finish off, using a plastic putty knife to avoid scratching. It was gratifying to see that unpleasant dark ring, mentioned earlier, come off along with the finish! The remaining goo was wiped off with a rag dampened with mineral spirits – used instead of water in order to avoid raising the grain.

Now I turned my attention to the light-colored nicks, scratches and abrasions on the front and sides of the cabinet. I had a can of walnut stain that turned out to be a pretty good match for the finish on the cabinet. Using a small brush (like the size that comes with a child's paint set), I was able to fairly well conceal most of those light-colored spots. However, I found that the stain worked better if I dipped the brush in the sludge that had remained at the bottom of the can even after my hard stirring. That way, the material went on more like paint than like a stain. As a final touch, I "painted" the exposed thicknesses of the decorative speaker opening to camouflage the light-colored deposit of grime with which they had become coated.

After completing work on the rest of the cabinet, I went back and coated the stripped top panel with a varnish/stain that harmonized with the rest of the finish. When it dried, I gave it a light going-over with 00 grade steel wool. Then I used some furniture polish on the entire cabinet. I was quite pleased with the result.

I had a few little problems to solve before the Zenith chassis could be reunited with its cabinet. I needed a substitute for the deteriorated shock-absorbing rubber cushions that I'd had to scrape out of their circular recesses in the cabinet base. I believe that I once came across replacement cushion material in an Antique Electronic Supply catalogue, but I decided to improvise instead. I had never been convinced of the necessity for these shock absorbers anyway.

I found some steel washers of the correct diameter to fit the recesses and some thin rubber pads of about the same diameter. However, the two together didn't rise above the recess enough to support the chassis. So I added a third, smaller, washer between the two in order to build up more height. I cemented each of the four sets of three washers together using more of that invaluable automotive "Goop." That way, the washers wouldn't shift around as I slid the radio

into the chassis, making it difficult for me to line up the holes.

At the last moment, I couldn't find any machine screws in my collection to fit the threaded mounting holes in the radio chassis (the chassis had come to me separated from the cabinet and without its mounting screws). I did have a 10-24 tap, however, that fit the holes snugly, so I just ran the tap through them. After replacing the speaker grille assembly, I was now able to mount the chassis in the cabinet using 10-32 screws and washers from the lumberyard.

One departure from the ideal I noticed, after the set was mounted through the screw holes in the base, involves the dial glass. Earlier in this article I had gloated that it was a perfect fit. Now I see that, contrary to the warnings I had received about clock glasses, this one seems to be too shallow. The space between the dial glass and the cabinet is perhaps a little larger than it should be and, looking down on the bottom of the dial at a sharp angle, I can see the shafts of the controls. The effect is not too noticeable when looking at the radio straight on and the overall look is still quite acceptable. Perhaps, eventually, the fates will send a junker Zenith my way with the correct glass.

I really enjoyed turning a radio that had come to me in pieces as a rather discouraging "basket case" into nice-looking, fully-functioning receiver that would grace any display shelf. I hope all this has convinced you not to be afraid to tackle sets that come to you in similar condition. The more irreplaceable relics we can save from the landfill, the better!

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## Uniden BC250D Portable Scanner

The Uniden BC250D is a portable scanner which can follow conversations in conventional and several different types of trunked systems. The two features which set the BC250D apart from previous trunking portables are wide frequency coverage and the ability to demodulate APCO P-25 digital voice signals when equipped with the optional BCi 25D card.

The BC250D has more features than we could ever hope to cover in this 2-page review, therefore we recommend you download an electronic copy of the owner's manual from the Support section at <http://uniden.com>. The optional BCi 25D digital card will be reviewed in a separate MT column.

The BC250D covers 25 - 512, 806 - 956 (minus cellular phone), and 1240 - 1300 MHz. The packaging claims "continuous band coverage (25 MHz to 1.3 GHz)," but there are frequency gaps at 512 - 806 and 956 - 1230 MHz.

There are seven choices of step size available plus an AUTO setting, the latter being determined by frequency. Steps of 6.25 and 8.33 kHz are not available.

### Memory

The BC250D's 1000 memory channels are partitioned into 10 banks of 100 channels each. Each conventional channel may be programmed with these attributes: a frequency and mode (AM, FM, WFM, NFM), a 16 character label, step size, rescan delay on/off, lockout, attenuator on/off, CTCSS or DCS tone squelch, and beep alert.

### Trunked Systems

There are a wide variety of trunked systems in use and the BC250D is designed to track conversations in these systems: Motorola Types 1, 2 (VHF, 400, 800, and 900 MHz), EDACS (Wideband 9600 baud, Narrow 4800 baud, and SCAT), and LTR. SCAT stands for Single Channel Autonomous Trunking and is an EDACS configuration in which a single frequency serves as both as a control and voice channel.

As with the earlier Uniden BC245XLT and BC780XLT, EDACS and LTR frequencies must

be programmed into memory channels in the proper sequence.

When fitted with the optional digital card, the BC250D can demodulate APCO 25 digital voice on conventional and trunked systems employing 3600 baud control channel signaling.

### Construction

The BC250D is a large scanner - near in size to the Radio Shack PRO-92. Rubber grips along the side of the BC250D make it easier to hold without slipping from the hand.

The BC250D's liquid crystal display is a dot matrix, i.e., composed entirely of small dots. Pressing the lamp key causes the display to be lit in an amber color and there are menu options for two brightness levels. The lamp times out after 15 seconds or may be set to remain on continuously.

Missing from the display are indicators for Tone Squelch, Attenuator, and Rescan Delay, so you cannot tell at a glance whether these options are enabled or disabled on a particular channel. To view a channel's configuration, push and hold the Menu/Back key for a couple of seconds. You can then see the channel settings, but you must scroll through them because the screen shows only three settings at a time.

The keypad can be backlit, which makes it easy to use the

BC250D in the dark. The keys require more pressure than other models, so it's a good idea to enable the keypad confirmation beep tone.

### Usability

You can program conventional memory channel frequencies using one of two procedures: 1) By positioning to the desired channel, then typing in the frequency followed by pressing the E key, or 2) Navigating the menu system.

The simpler, direct method works, but only for frequencies which coincide with the default

step size. For example, the default step size is 50 kHz in the 225 - 399.95 MHz military air band. If you enter 335.525 MHz directly, the BC250D will coerce the frequency to 335.55. You can then use the menu system to "drill down" to the STEP submenu, change the step size to 25 kHz, then re-enter the 335.525 frequency. Now, the BC250D will accept the frequency without rounding.

You can program alphanumeric labels for memory channels, banks, and talk groups. If a talk group becomes active while searching for new talk groups, the ID will be displayed instead of the label you may have programmed. This is different from the older BC780XLT and PRO-2067 and makes it more difficult to distinguish "new hits" from previously programmed talk groups.

The memory scan speed varies widely, depending on what's programmed in the memory channels. We programmed channels with our usual variety of frequencies and (conventional) modes and measured a scan speed of 27 ch/sec.

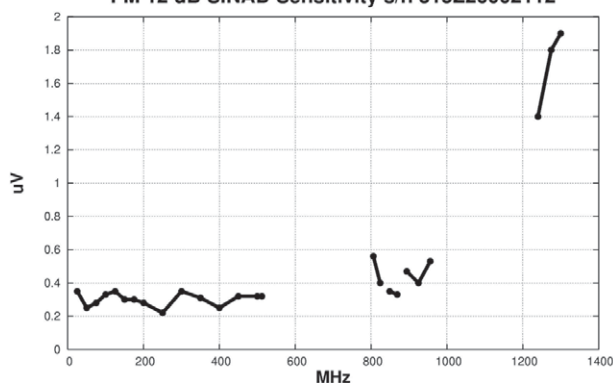
We then performed a full reset by pressing 2, 9, and HOLD while powering on the BC250D, and reprogrammed similar frequencies in different channels in a different order. This time, the memory scan speed was a slow 15 ch/sec.

We were able to push our BC250D to scan at 93 ch/sec by programming 155.475 MHz FM into 1 channel and 40.000 MHz FM into the next 19 consecutive channels - an artificial arrangement.

Some of the earlier model Uniden scanners, e.g. BC895XLT and BC9000XLT, featured TurboScan, and sped up the scan rate by sorting the frequencies before scanning. The BC250D scans memory channels in channel



Uniden BC250D  
FM 12 dB SINAD Sensitivity s/n 315Z26002112





number order and we didn't find a keystroke combination to scan them by frequency.

The BC250D is supplied with a custom 4.8 volt, 1500 mAH NiMH

rechargeable battery pack (see photo). The included AD-600U power supply is used to recharge the internal battery in 14 to 16 hours. You can listen to the scanner while recharging, but the manual warns that you should disconnect the wall wart after charging completes.

We left the scanner on for 16 hours while charging and the case became slightly warm to the touch. The AD-600U power supply is unregulated and we measured a 16.3 VDC output under no load conditions. Using a regulated 13 VDC power supply, capable of furnishing 500 mA or greater current, would generate less heat within the scanner. The regulated supply could be connected to the scanner via the optional UA502 DC power cord, available at the Uniden web site for \$6.60.

You can't walk into any drug store or 7-11 and buy a replacement battery for the BC250D because it is custom made. Radio Shack's GRE-made scanners have a superior battery setup. They are powered by four individual AA bat-

teries and you, the customer, get to choose your favorite style alkaline, NiCD, or NiMH batteries. GRE-made scanners like the PRO-92 and PRO-95 are supplied with two battery holders; one for rechargeable and another for alkaline cells.

#### Overall

Digital-capable trunking and wide frequency coverage make the BC250D the ultimate VHF/UHF portable, though it is hamstrung by a clumsy, proprietary battery pack.

#### ◆ C. Crane VersaCorder

Kelly Mills, AE4FG, wrote to us about a problem he encountered with a C. Crane VersaCorder (reviewed in December 2002 MT). Kelly noted that the erase head in his VersaCorder did not completely erase the previously made recordings, so he heard them at a reduced volume during playback. He tried using different tapes to no avail.

He could recreate the problem using the following procedure:

**Tape some speech at slow speed.  
Rewind the tape,  
Tape some more speech at slow speed,  
Rewind the tape,  
Tape some speech at normal speed.  
Rewind the tape again,  
Playback the speech at normal speed.**

Kelly wrote "You should not be able to hear both of the slow speed recordings. The previous recordings will be heard at a reduced volume, but they are there, and they take away from the listening experience. You can hear the previous recordings at slow speed without recording at normal speed, but the procedure above allows you to hear the previous recordings more easily."

Kelly returned his defective VersaCorder to the dealer.

#### ◆ Become a Scanning Renaissance Man

About three years ago, "Jim" posted this question on Usenet:

"... in the past three years the amount of material to listen to in my area has decreased so much that I'm stuck to hearing the garbage men and the odd taxi now.... What is everyone listening to out there? Someone suggest ideas that would make me stop putting this scanner on eBay and making a quick 130 bucks."

My response holds as true today as it did back in the year 2000.

You mentioned monitoring garbage men and taxis. Don't sell business and industrial monitoring short. It's fun. I listen to security guards, army comms, low power frequencies, wireless mikes, sports comms, FRS, hotel staff, and lots of other signals – more than police and fire.

I avoided a major traffic jam yesterday because I heard a delivery truck driver warn other drivers about it.

Your PRO-51 can also monitor aircraft, VHF marine, and railroad signals. Don't con-

fine your monitoring to authorized frequencies. Listen "in the corners" of the spectrum.

Enjoy pilot-to-pilot chatter on 123.45 MHz, for instance (and 234.5 MHz if you get a mil air scanner). I've monitored and located two bootleg repeaters in the 138 - 144 and 148 - 150 MHz federal bands.

Find the frequencies used by garage door openers, wireless doorbells, heart monitors, electronic dog collars, wireless intercoms, etc. If a device emits RF, I want to know its frequency. Last night, I heard my new Logitech cordless wheel mouse on 27.045 MHz.

How about DX? The 30 - 50 MHz band has been open in the mornings. From here in Illinois, I tuned in New York City taxi chatter, South American repeaters, southern highway workers, far away US military comms, and lots of other DX during a 20 minute listening session today. Hearing all those accents was entertaining.

Become a scanning "renaissance man."

*The Uniden BC250d is available from Grove Enterprises for \$369.96 plus shipping. BC250D digital card \$309.95. Call 800-438-8155 or visit <http://www.grove-ent.com>.*

**NOTICE:** It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

#### Measurements

##### Uniden BC250D Scanner S/N 315Z26002112

Uniden America Corp.  
4700 Amon Carter Blvd.  
Fort Worth, TX 76155  
tel. (800) 554-3988  
<http://www.uniden.com>

##### Frequency coverage (MHz):

25 - 512  
806 - 823.9875  
849.0125 - 868.9875  
894.0125 - 956  
1240 - 1300

##### Step sizes (kHz):

5, 7.5, 10, 12.5, 25, 50, and 100, AUTO

**Modes:** AM, WFM, FM, NFM, user selectable

**NFM modulation acceptance:** 12 kHz

##### Attenuator:

0 dB @ 40 MHz  
9 dB @ 155 MHz  
10 dB @ 460 MHz  
22.5 dB @ 860 MHz

##### Image Rejection Due to 1st IF (380.7 MHz):

35 dB @ 40 MHz  
61 dB @ 155 MHz  
76 dB @ 860 MHz

**Squelch tail near threshold (1 uV @ 155 MHz):** 8 ms.

**Practical memory scan speed:** varies, depending on memory contents (see text)

#### Full 800 MHz Scanners

##### AOR AR-8600MKII

**\$1099<sup>US</sup>** **Wideband mobile rx**  
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**continuous. (unblocked)**  
- All modes: NFM, WFM, NAM, WAM, USB, L/USB  
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- Improved front end - Computer control - Improved TCXO  
- 1000 memories - 20 banks x 50 mem - 40 search banks  
- 2 VFO's - Up to 37 ch/second search - Optional cards

**ALINCO DJ-X2000**  
**Intelligent Wideband Receiver**  
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- Flash Tune nearby signals - Transwaver  
- Channel scope  
**\$649<sup>US</sup>** - 2000 memory channels  
- Superb sensitivity  
- Various scanning modes - Menu system

**ICOM IC-R5 (unblocked)**  
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## Digging Signals Out of the Noise Diamond Cut Five/Live Program

**H**ow many times have you been listening to that rare monitoring catch only to have a station start transmitting on a nearby frequency! Or, perhaps propagation fading causes the signal to noise ratio to drop. In either case, the pain of trying to hear a weak signal shrouded in noise quickly replaces the pleasure of listening to that rare intercept. The problem is as old as radio itself.

### ◆ What is the Answer?

In the 1970s I managed a group of engineers that designed advanced audio filters for military radio communications products. Each filter was carefully designed for a specific application and resulted in expensive and bulky hardware. Every filter consisted of circuit boards stuffed with active components, high precision resistors, capacitors and custom wound inductors – not exactly products that the general public had access to, or could afford.

In the 1980s I found myself managing the development and design of agile switched-capacitor-filters. This time the target market was not exclusively the military, but included the emerging personal communications market (i.e., cellphones). Therefore cost, size and application flexibility became paramount design considerations.

In the early 1990s, fast, inexpensive computing power became available. Audio digitization in the form of compact discs had become the norm. Simple software-only filters became a reality. These filters which utilized

near-real-time running programs to mimic the old hardware filters gave us all a glimpse of what was to come. DSP, digital signal processing, became a high tech buzzword. These early filters relied on advanced custom microelectronic chips with high processing speeds.

By the late 1990, PC speeds and capabilities had eclipsed the speed and capabilities of the first DSP chips. Therefore, many of the simple DSP filter software programs, which initially could only run using custom DSP chips, were converted to PC programs.

If you were reading this column at the end of the '90s and during 2000, you'll remember a number of simple DSP filter program reviews. Although simple in their applications, they were useful and esthetically amazing. Pure software performing hardware filtering! We had come a long, long way in thirty years. But technology does not stand still. What is available in 2003?

### ◆ Enter DC Five/Live

Diamond Cut Five (DC 5) is a program that uses a PC to do just about anything you need to do in the audio spectrum. It is a precision audio signal generator. It is an audio analysis tool providing signal spectrum analysis and distortion analysis.

And finally, and perhaps most important to *MT* readers, it is an extensive suite of complex audio filters. All this can be used to produce customized single filter elements and multi-filter networks. In the DC 5/LIVE version, which we will look at, the filtering can

be performed on previously recorded audio files. Alternatively, "live" off-air audio sources can be processed and the result played in real-time via the computer's soundcard output.

### ◆ Provisos and Requirements

Before we start, two important factors about DC 5: One, to really use this program you **MUST** be prepared to spend some time reading tutorials in the 300-page instruction manual. They are easily followed and well written. And second, you must be willing to

spend some money, since this program costs \$199. On the other hand, I have not seen a program that can do the things that DC 5 can for under \$1500!

So, with these two provisos in mind let's see what this extraordinary program can do for you.

All it takes is a PC with an Intel or AMD 200MHz processor, running Windows 98 (second edition), ME, 2000 or XP. Also, a CD-ROM drive and sound card are required. For live filtering capability, the sound card must be capable of record and playback at the same time (duplex operation). I have used DC 5 on a 233 MHz Pentium I HP desktop machine with 128M Ram and also on a 366 MHz Pentium II laptop with 64M of RAM. Installation from the CD was quick and easy, without any problems.

DC 5's operation on the desktop was bulletproof. The laptop had a bit of a problem when any function was chosen and then closed three times in succession. This caused the program to stop due to an error with the video card driver. Returning to the desktop, I then repeated the same three operations in succession with absolutely no problems. Quite frankly I'm not sure what caused the problem on the laptop. It may have something to do with the laptop's liquid crystal display.

### ◆ Using DC 5

As mentioned, DC 5 is multitasked as an audio generator, analysis and custom filtering network. Due its many facets of operation and capabilities and our limited column space, we cannot come close to covering all the features of this fine program. If we concentrate on using DC 5 for audio restoration, the most likely use of the program for radio communications, we will be exercising some of the analysis and the filter capabilities of DC 5.

### ◆ Removing Background Noise

Figure 1 displays the main screen of DC 5. The top section is a VU meter graph of the input signal. This can either be a live signal; for example the audio output of a receiver. Or it can be audio saved as a ".wav" file.

For now, let's work on an audio file. We can see the background noise as a thickening of the middle of the signal. By removing the noise we would make the voices (or tone data

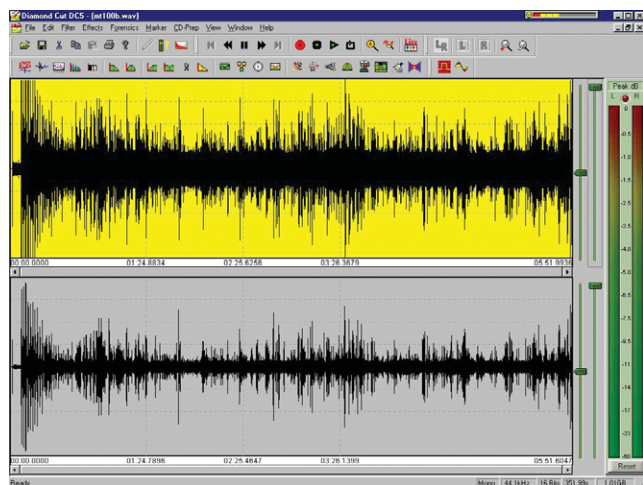


Figure 1 The main screen of DC 5

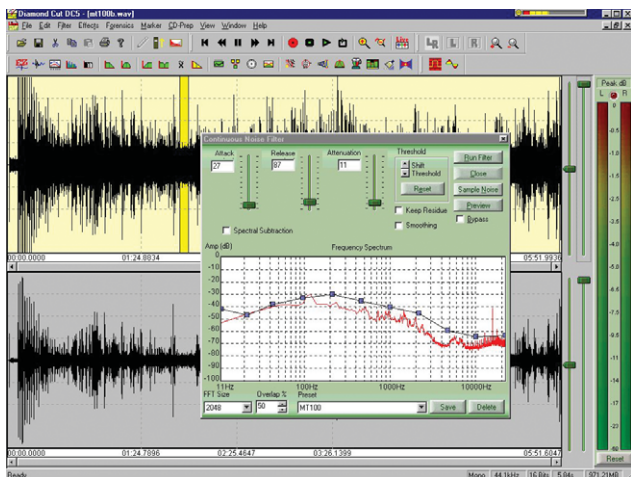


Figure 2 Continuous Noise Filter Screen

signals) much easier to copy. This is the job of the Continuous Noise Filter, just one of many DC 5 filters.

### How's It Done?

First we need to find a quiet, no audio signal section on the source. Here, the entire signal is just noise. We can use the "Zoom" feature by highlighting this quiet section while holding the left mouse button. Then clicking on the plus in the magnifying glass at the top right of the screen gives us an expanded view. Now we can more exactly highlight the quiet section.

Clicking the "Filter" dropdown menu at the top of the screen and then selecting "Continuous Noise" brings up Figure 2. Here we can now use the filter using default values for filter parameters. Since noise is composed of unique types and frequency components, the DC 5 filter will now analyze and characterize our exact "noise" by clicking "Sample Noise." After a few seconds (depending how large of a section we have highlighted) a graph of the amplitude versus frequency of our background noise, or noise floor will be displayed.

At this point we can hear the results of our filtering via the computer's speakers by clicking on the "Preview" button. The user can vary the Attack, Release and Attenuation settings from their default values and then preview the results.

### Seeing Is Hearing

Now that we have sampled the charac-

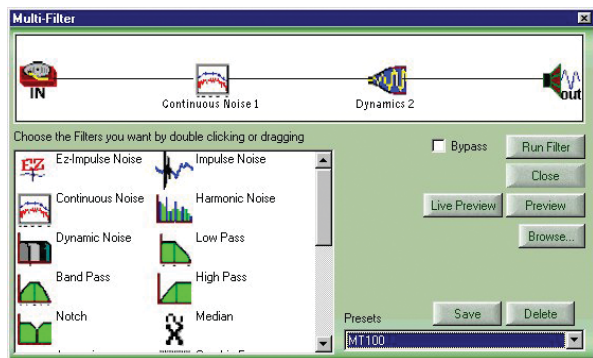


Figure 3 DC5's LIVE Drag & Drop Filtering Screen

teristics of our background noise we can apply the filter to the audio file, thereby "subtracting" out the noise! Highlighting the input signal in the upper section of Figure 1 and then clicking "Run Filter" performs this. The result can be seen on Figure 1 on the bottom graph. Notice how the trace's middle has thinned down. That is the background noise "going bye-bye" and the Continuous Noise Filter doing its job. Now when we listen to the file, the voice or audio tone data will appear to pop out of the noise.

For whistling heterodynes from adjacent AM stations the Notch Filter will do the job. Whistle gone.

The Dynamic Noise Filter and Impulse Filters can also be very useful to radio monitors.

Now that we have reduced the noise, we can use other features of a DC 5 to further enhance the audio.

### Expanding Our Results

Selecting the Dynamics Processor function, found on the "Effects" menu, we can expand the amplitude of our signal of interest to its fullest level, thereby further increasing the signal to noise ratio.

DC 5 offers many other filters including high pass and low pass. Details of each, including short "How To Use" tutorials are included in the User Manual.

### Using the Live Mode

Till now, all of the filtering we have performed was on previously recorded files. What about live/off-air audio? We can use the same audio modules (Continuous Noise Filter and Dynamics Processor) on live audio and immediately listen to the results.

Clicking the LIVE icon on the Command line opens up a very clever drag and drop window (Figure 3). The user can select a filter from the box on the bottom left and drag it to the line between IN and OUT. In fact, any number of filters can be selected, dragged, and dropped into position relative to each other and the IN and OUT. It's that simple! By double clicking on the filter the user can customize it for his specific application.

Once we have all of our filters in place, clicking the "Live Preview" allows us to do just that. I still cannot believe how simple it is to design and "build" complex, multi-filter audio networks. In the 1980s it took an experienced engineer and a technician three days and hundreds of dollars in precision components to produce what we just did in twenty minutes!

### Overall

First, go back and reread the Proviso paragraph, above. With all that still standing, my overall impressions are excellent. We have really only covered DC 5's audio signal processing capabilities. We have not even touched on its test and measurement and recording automation capabilities.

There are other programs, each of which have some of the functions found in DC 5. These include SR 5 Spectrum Analyzer, FFT Properties, Chroma Sound and Swezey DSP, to name a few. There are some real gems in this group.

Compared to these programs DC 5 stands out in two areas: One, its vast capabilities, including the sheer number of filters and its Multi-filter operation. And, two, its \$200 price tag which leads the pack.

DC 5 can do just about anything you can imagine to an audio signal. To try it for yourself, you can download a partially functioning demo version of Diamond Cut 5 from their website at <http://www.enhancedaudio.com>. DC 5 is available for purchase from a number of sources, including Grove Enterprises (1-800-438-8155 or visit <http://www.grove-ent.com>).

Well, that will do it until next time. Hope you are enjoying spring and the renewal of life and hope that it brings.

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## MFJ's Versatile Noise Canceling Tool

By Ken Reitz

**H**ow many of us are looking for that magical black box which blows away interference, does away with fading and brings up all signals like locals with just the flip of a switch or the push of a button? Yeah, me too.

But, the fact is, radio waves still insist on obeying the laws of physics and that makes us all have to work hard for every new signal we catch. To that end we've found ourselves over the last few decades enlisting the aid of an increasing number of promising technologies such as more sensitive receivers, digital signal processing (DSP) and extensive antenna systems.

But, there's a drawback. The better the receiver and antenna system, the more interference you can also introduce into your already saturated receiver. Built-in receiver noise-blankers are limited in the types of noise they can "blank." DSP can help with some interference, but it can't increase signal strength or null competing stations on the same frequency. That's where the MFJ-1025 comes into play.

### ◆ The Versatile 1025

Officially MFJ calls its 1025 a "Noise and Interference Canceler/Signal Enhancer" and here's the theory of operation in a nutshell. Noise and interference can show up in our radios along every Hertz of the tuning dial. Noise can be local or distant in origin, natural or man-made, and sometimes we aggravate the situation by using bigger antennas. Regardless, noise finds its way into the antenna (and thus our receivers) along with the desired signals. You need to take out the offending noise *before* it gets into the receiver, which is why the 1025 is placed between your antenna and the receiver. You can't phase just one antenna, but you can phase two and, by adjusting the phase of the same signal arriving at two different antennas, interfering noise or signals can be reduced or removed altogether.

MFJ makes two models of the noise canceling signal enhancer, the 1026 and the 1025, which are very similar. The main difference between the two is that the 1026 has a built-in but removable telescopic whip antenna as the "noise" antenna, while the 1025 does not. Unless you're operating portable there's little need for the relatively small built-in "noise" antenna of the 1026 (reviewed in *MT* August '99). Besides, working at frequencies below 1.8 MHz, only large scale antennas will be able to receive the same signals and therefore function effectively as the "noise" antenna.

The biggest problem with both models is

that they were designed for the ham bands (1.8 to 30 MHz), and there's a very effective filter in the circuit for frequencies below 1.8 MHz (the AM and LW bands). However, simple modifications will remove the filter and let the unit work its magic all the way down to the bottom of your receiver's tuning range (see side bar).

Amateur radio operators will find the 1025 particularly useful in the 160 meter band (1.8-2 MHz) where many signals are weak and atmospheric conditions hardly optimal. Here Beverage type receiving antennas are often used to help dig out the DX. With its built-in transmit/receive delay control, the 1025 can allow a ham to receive on a Beverage and transmit on a dipole or vertical antenna. The addition of outboard devices such as the 1025 can make the difference for many hams operating on this band.



**MFJ-1025 Noise Canceling Signal Enhancer: Nulls noise, cuts offending signals, boosts weak stations, gets your white clothes cleaner than ever before! (Courtesy: MFJ Enterprises)**

SWLers tuning into the AM and LW bands will find that the 1025 can control a small array of antennas to radically reduce noise and increase signal strength. Employing two directional antennas, the 1025 will actually allow the listener to "steer" the array. Nulling out competing stations on the AM band lets the listener hear signals perhaps never heard before from that location. And, using the 1025 on highly directional Beverage antennas will make transoceanic reception on LW a real possibility.



**Back panel of the hard working, plainly built MFJ-1025. Plug in your main and noise antennas to phase out noise and increase signal strength. There's room to add a "swap switch" for more versatility. (Courtesy: Author)**

### ◆ The MJF 1025 Up Close

Those familiar with the products of MFJ Enterprises will recognize the traditional black cabinet, white silkscreen lettering and generic front panel knobs and switches. MFJ products have always been produced with a keen eye to keeping down costs. They sometimes earn the wrath of hams who wish they'd put more expensive SO-239 50 ohm sockets on the back of their products. There are three such sockets on the back of the 1025 (see photo) and during typical use they'll get a lot of wear. The one labeled "radio" goes to your receiver or transceiver; the one labeled "main antenna" goes to your Beverage array (if you're SWLing) or your transmitting antenna (if you're hamming it up); the "auxiliary antenna" is your "noise" antenna or additional directional antenna if you're using the system to "steer" an array. The back panel also features a ground terminal and 12 volt dc power jack.

The front panel has four knobs, three push button switches and a red LED power indicator. All knobs are marked from 0-10 and you'll use those markings as a reference when tuning various frequencies. The first knob on the left is the transmit/receive delay control, which adjusts the "hang time" of the transmit/receive relay inside the 1025. Unless you're planning to transmit, this knob is not used in the tuning procedure. The second knob adjusts the Auxiliary Antenna gain, the third knob adjusts the phase between the auxiliary and main antennas and the fourth knob adjusts the Main Antenna gain.

The first push button on the left is red and turns the unit on or off (the red LED on the right of the cabinet lights when the unit is on). The second switch selects phase components for low frequencies (below 7-12 MHz) when the button is out, or high frequencies (above 7-12 MHz) when the button is pressed in. According to the instructions, if you are listening "...in the range of 7-12 MHz, either setting may work."

The third button is labeled "Phase" and selects either normal (when it is pressed in) or inverted phase control (when the button is out). The entire unit is by-passed when the power is turned off, so there's no need to disconnect your antennas if you want to use the signal directly. This is sometimes a good way to see just how effective the unit is.

### ◆ Using the 1025 in the Real World

The 1025 comes with a limited instruction manual. Save for the schematic diagram in the

back, there are no diagrams, pictures or drawings to help those who are visual learners. Yes, you'll be forced to read the manual. However, there has been a lot written about the successful use of the 1025/1026 in the real world and I recommend you take the time to read what others have said (see More Information below). Their anecdotal findings should make you a believer. The most in-depth material appears in the Special Antennas section of hard-core-dx (see below for link information).

The one thing you will read over and over is that it takes a lot of practice and experience to null background noise or unwanted signals. This is not a set-it-and-forget-it device. Every time you change frequencies you'll need to adjust the auxiliary, main, and phase. For that reason there is a very useful "Settings Log" on the back page of the manual. You'll want to reproduce this page to log the settings for each frequency you've tuned – and that should give you an idea of how tedious it is to use this unit.

However, I found after an evening of serious tuning, I was able to routinely make the adjustments to phase out noise or increase signal strength. But, again, you have to be actively "riding" the controls as you span the AM/LW dial. There is a very useful discussion of this topic on the hard-core-dx web site entitled, "The Art of Noise Nulling" (see below for link).

You can use the 1025 to phase two verticals to produce a "steerable" array: Use a Beverage with a quiet main antenna to enhance weak signals; or, as the manual suggests, "...two parallel Beverage antennas spaced an eighth to quarter wave apart with an eighth to quarter wave stagger in the desired direction can be combined to improve front to back, steer nulls or add desired signals..." The main thing is that you have to be prepared to experiment. In the manual it is suggested that, "...In some cases weak signal performance can be improved by swapping MAIN and AUXILIARY antenna inputs." This sounds contradictory but it does work, and it's precisely this type of experimental spirit you'll need to deal with this product. And now you may understand the frustration of dealing with the hard-to-use SO-239s. See side bar for a modification to make this easier.

### ❖ One Happy Experimenter

I used the 1025 with a combination of antennas. First I set up a "mini" Beverage antenna (350-ft long) oriented to the east and terminated with a 400 ohm resistor and a four foot aluminum ground rod sunk into the edge of a pond. For the "noise" antenna I used the Grove Tunerless All-Band antenna (a homebrew design I have referred to frequently).

Results were excellent. For the first time I was able to hear Radio France on 162 kHz and Bechar, Algeria, on 153 kHz, among others. Then I put 500-ft unterminated wires to the west and south and was able to hear stations over 500 miles away even during the day time. When the propagation at night was good I could pick up regional broadcasters never heard from my location before. I found I could null out strong signals and pick out the weaker stations with just a little practice. I could actually hear a dozen stations from Cuba, the Caribbean, and South America from my location on the East Coast. Switching to a

## Modifying the MFJ-1025 for AM/LW Listening

When the MFJ-1025 and 1026 were originally introduced in the late '90s it was intended for amateur radio use in the HF spectrum (1.8 to 30 MHz). However, it was soon snapped up by AM and LW DXers who sought serious help in fighting the neverending battle of noise and interference on their atmospherically plagued bands. In the past few decades the burgeoning AM band and the blossoming of RF-unfriendly electronic devices have made DXing these bands a dying art. Imagine the disappointment of these stalwart radio enthusiasts when they discovered that MFJ had built in filters to render the unit nearly useless on just the bands they needed.

Without a moment's hesitation, those handy with soldering irons and a grasp of the unit's circuitry set out to remove the offending filter and bring the unit's considerable capabilities down to their preferred frequencies. A thorough discussion of this and other modifications for the 1025/1026 can be found in Mark Connelly's 1997 piece "Field Testing comments: The MFJ-1026 Phasing Unit" on the **hard-core-dx** web site under the "Special Antennas" section (<http://www.hard-core-dx.com/nordicdx/antenna/special/mfj1026.html>).

The components of the high-pass filter to be removed are L5, L6, R27, L3, L4, and R26. They are easily identified on the circuit board. In the more recently produced units, these components are surface mounted and pop off with very little heat from a soldering iron (see photo of inside view showing com-

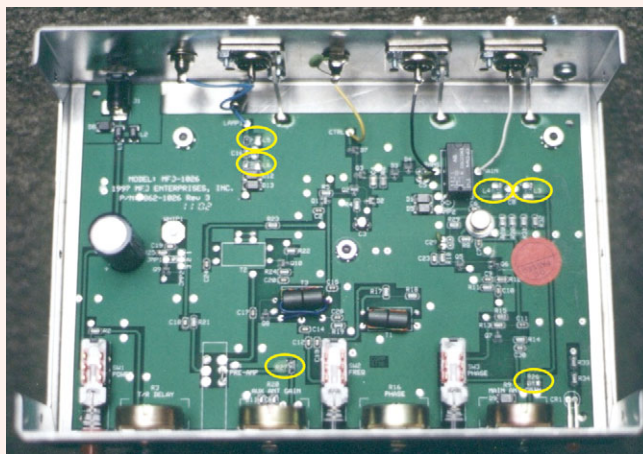
ponents removed). I found that the entire procedure, including taking off and replacing the cover, took under 15 minutes.

Another modification has to do with adjusting the phasing range of the unit by simply reversing the antennas – i.e. the "main" antenna is put into the "aux" antenna and *vice versa*. This is easily done by hand, but if you do this often you'll find it a pain in the neck. Mark Connelly suggests adding what he calls a "swap switch" – a double-pole/double-throw switch to achieve the same end. Details of this procedure are in that same piece.

MFJ has no plans to make a "modified" unit, so you'll have to do this modification procedure if you intend to use the unit for DXing the AM and LW bands. Remember that by doing this modification you'll be voiding your warranty.

You can help your phasing unit work even better by working on your own RF environment to help keep it "signal friendly." First, always make sure dimmer switches and other broadband "hash" generators are off. Some dimmer switches continue to generate even when they're "off." Unplug the devices or take them out of the circuit. Look for hard to find sources such as fluorescent displays on desktop adding machines, desktop fax/printers and computers, or older TV sets. You may need help with outdoor sources such as utility pole transformers and neighbors' electronic devices. Generally, the more urban your environment, the more noise you'll have to contend with.

*The inside scoop on the MFJ-1025. Plenty of room to wield a soldering iron to remove surface mounted filter components which opens up the 100-1800 kHz frequencies for noise canceling and signal enhancing. Circles indicate components to remove. (Courtesy: Author)*



northern array, I could likewise hear many Canadian stations as well as regional Northern stations.

Your experiences, of course, will be better or worse, but there's no question that DXing the long and medium waves from my own location has been greatly enhanced by learning to use the 1025. Your location may call for some ingenuity. For instance, you may not have enough room to put up antennas 500 to 1,000 feet long. But, you might be able to get the help of a few neighbors to run the wire through hedges or along fences. Re-

member, typical Beverage receiving antennas don't want to be more than three to six or seven feet off the ground. Indeed, if nothing else is available, you can simply lay the wires on the ground! Just make sure that it is in a reasonably straight line in the direction you wish to receive.

If you want to increase directivity, terminate the end with a 400-600 ohm resistor and add a 4-ft ground rod at the end point. An unterminated Beverage antenna receives in both directions along the antenna line, which or may not be desirable for



your situation.

A quick word about Beverage antennas is in order. There have been volumes written on the subject. I've included just a few sources of such information at the end of this article. You won't have to read much before you'll find out that there are at least a dozen "real" or "only" ways to put up such an antenna. Everybody has solidly documented data proving that everyone else has it wrong.

So, my advice: join the fray! Read everything you can and then do your own experiments. It won't be long before your own anecdotal information is added to the already oceanic sea of information now available. My own feeling is that Beverage antennas are very forgiving and it's hard not to get good results no matter what you try. The basics are these: depending on the size wire used and height above ground, Beverages tend to be 400-600 ohm impedance. If you're connecting to a 75 or 50 ohm cable, you'll need anywhere from a 5:1 to a 9:1 balun.

You can make your own balun using a 1/2-inch piece of ferrite and a length of insulated hook-up wire. Details are found in the sources below. I've found that using a standard TV antenna transformer, which is a 4:1 balun, also works.

Terminating the antenna can be done by attaching a 400-600 ohm resistor between the Beverage antenna wire and the ground rod. It's really that simple. Of course, perfectionists will prefer to strictly follow the precepts of whichever low-band guru they follow.

And, finally, remember that DX is often fleeting. Conditions in the atmosphere and on the ground can conspire to bring you DX possibilities which may never be duplicated. So, keep a good log and be sure to note the details: date, time, frequency and program content of the station you're receiving. Later you may want to QSL the station but never be able to duplicate the conditions again.

### ❖ MFJ-1025 Specs & Warranty

At just under 8-1/2 inches wide, 6-in. deep and only 2-3/4-in. high, the 1025 takes up very little room on the desk. And at just a pound and a half in weight, it will pack away nicely on your next DXpedition. The 1025 requires 10 to 15 volts dc from a negative ground supply. It comes with a 3-foot long, 2.1 mm coaxial power cord with bared black (-) and red (+) leads, which can be attached to a car/tractor battery or typical power supply. The 1025 comes with a full 12-month warranty, but the modifications detailed in this article will void that warranty. Retail price is \$159.95. This product is made in the U.S.A.

**This is your equipment page. Monitoring Times pays for projects, reviews, radio theory and hardware topics. Contact Rachel Baughn, 7540 Hwy 64 West, Brasstown, NC 28902; editor@monitoringtimes.com.**

### For more information on the MFJ-1025:

MFJ Enterprises  
300 Industrial Park Road  
Starkville, MS 39759  
800-647-1800  
<http://www.mfjenterprises.com>

For more information on the MFJ-1025, DXing the AM/LW bands, and Beverage antennas: Jacques d'Avignon, Ken Alexander, and Kevin Carey DXpedition to Miscou: <http://www.dxing.info/dxpeditions/miscou2002.dx>

Details of Miscou 2002 DXpedition in *MT*:

Kevin Carey's column "Below 500 kHz" *MT* Dec. 2002

Jacques d'Avignon's "The Why and How of DXpeditions" *MT* Feb. 2003

Mark Connelly's review of the MFJ-1026 Phasing Unit:

<http://www.hard-core-dx.com/nordicdx/antenna/special/mfj1026.html>

Discussion on the Art of Noise Nulling:

[http://www.hard-core-dx.com/nordicdx/antenna/special/mfj1026\\_7.html](http://www.hard-core-dx.com/nordicdx/antenna/special/mfj1026_7.html)

More information on Beverage antennas:

"DXing on the Edge-The Thrill of 160 Meters" \$29.95 available from ARRL  
<http://www.arrl.org> or order toll-free 888-277-5289

"The Classic Beverage Antenna, Revisited" by H.H. Beverage ex-W2BML and Doug DeMaw, W1FB. January 1982 *QST*. Available free to ARRL members on-line PDF format.

KB1GW's Collection of Beverage Antenna Information. <http://www.geocities.com/kb1gw/bev-page.html> Has many links to other interesting places on the Web for Beverage antenna information.

### Programming Spotlight continued from page 41

**The Whole World on the Radio Dial** - A new program.

On *R. Ukraine Int.* - A 2118; S 0018, 0318, 1118.

**Viva Miami** -

On *WRMI Florida* - S 0330 (7385), 1200 (15725), 2130 (15725); M-F 1130 (9955); A 0900 (9955), 1100 (9955). [Schedule changes frequently; consult <http://www.wrmi.net> and click on "Programming" for updates.]

**Wavescan** - Adventist World Radio's excellent program for DXers and SWLs around the world, produced by longtime DXer Adrian Peterson and presented by David Barasoian.

On *Adventist World R., Austria* - S 0200, 0730, 0900, 1530, 2130.

On *Adventist World R., Slovakia* - S 2030.

On *Adventist World R., South Africa* - S 0400, 0430, 0500, 0530, 0600, 1800, 1830, 2000, 2030.

On *Adventist World R., UAE* - S 0030, 0330, 1300, 1330, 1630.

On *KSDA Guam* - S 1000, 1330, 1600, 1700, 1730, 2000, 2130.

On *WRMI Florida* - S 1300 (15725), 2100 (15725), A 1030 (9955), 2230 (15725). [Schedule changes frequently; consult <http://www.wrmi.net> and click on "Programming" for updates.]

(Also available on-demand <http://english.awr.org/wavescan>.)

**World of Radio** - Glenn Hauser's comprehensive activities report on the hf broadcast bands, including frequencies, personalities, station and program information.

On *WBCQ Maine* - W 2200 (7415/17495), M 0445 (7415).

On *WJIE Kentucky* - M/T 0600; M-F 1200 (cycle begins each H)

On *WWCR Tennessee* - H 2030 (15825); A 0600 (5070); S 0230 (5070), 0630 (3210); W 0930 (9475).

On *R. for Peace Intl.* - F 1930; A 0130, 0730, 1330, 1800; S 0000, 0600, 1200, 1830; M 0030, 0630, 1230; T 1900; W 0100, 0700, 1300.

(Also available on-demand <http://www.worldofradio.com>.)

**Worldwide Friendship** - A friendly program of listener correspondence, reports and information about the shortwave listening hobby.

On *R. Korea Intl.* - A 0810, 1140, 1310, 1610, 1910, 2110, 2210, S 0210. (Also available on-demand <http://rki.kbs.co.kr/>.)

In addition to the radio programs listed above, two long-time favorites continue to provide timely information in print form with some multimedia content via the Internet: **Media Network** from *Radio Netherlands*, edited by Andy Sennitt <http://www.rnw.nl/media> and **MediaScan** from *Radio Sweden*, edited by George Wood [http://www.sr.se/rs/red/ind\\_eng.htm](http://www.sr.se/rs/red/ind_eng.htm). Both also provide listeners, upon request, with regular newsletters via e-mail.

Special thanks to Bill Brady, Glenn Hauser, Marie Lamb and Harold Sellers whose valuable work has been included in this month's column. Until June, good listening!

# MT REVIEW

## GAP "Hear It" DSP Speaker

By Bob Grove W8JHD

A number of digital signal processors (DSP) have been introduced to the market, some with speakers and some without. Quality of the delivered sound when used with receivers and scanners varies from harsh and distorted to silky clean. The new "Hear It" external speaker, manufactured in England for GAP Antenna Products, is a welcome addition to the latter category.

A tiny accessory, the "Hear It" measures a mere 4-1/3"W x 2-1/2" H x 2-1/2"D, and weighs only 7 ounces. It is designed to be used in compact mobile installations; a mounting bracket, 8-foot input cord with 1/8-inch (3.5 mm.) mini plug, and fused DC power cord are included along with an instruction booklet. The unit's 2.1 mm. power jack will accept 12-28 VDC at approximately 500 mA, making it more universally applicable to fixed, mobile, and even aeronautical configurations.

Typical applications include amateur radio, scanner monitoring, maritime mobile, CB, mobile shortwave listening, and other uses where a variety of interference affects clarity of received signals.

The small internal speaker is ideally suited to voice frequencies, but for more demanding sound requirements, an external speaker or headphones may be plugged into the 1/8" jack provided.

A simple on/off switch selects DSP ("Noise Cancellation") or normal (unfiltered) mode. A front-panel, two-color LED indicates two settings: one color when power is applied and normal audio is being passed, and the second color when the DSP is switched on. A rear-panel DIP switch allows any of 8 noise cancellation levels to be selected by the user. A volume control shaft is also accessible for setting audio levels to suit the listening environment.

The input circuitry will tolerate up to 5 watts of audio; output from the unit's own amplifier is 2.5 watts maximum.

### ◆ How well does it work?

We decided to put the new "Hear It" through its paces on the shortwave bands where the racket is truly raucous! I left the DSP selector at maximum, the way it came from the factory, because that's where distortion would show up – if it had any. The specs indicate that noise can be attenuated by as much as 20 dB, typically. That's a sizable reduction.

Canada's time signal at 7335 kHz seemed like a good bet; it was weak, fluttery, and filled with background hiss. Switching on the noise reduction switch provided an astounding elimination of the hiss and resultant flutter, and the tones were crisp and clean. The voice announcement was as if the announcer were in the room.

Just to be sure conditions hadn't changed, I switched the DSP circuit off; sure enough, the noisy hiss and flutter were back, and the voices harder to understand. Quite a demonstration! Similar improvement was noted on 5 MHz WWV as well as virtually any AM international broadcaster accompanied by hiss or other noise.

On other modes as well, such as CW and SSB, the little signal scrubber polished signals clean as a whistle. It doesn't remove heterodyne tones since it has no notch function, and it won't remove other audio signals which share the same pass band of the desired signal; this is the job the receiver's IF filters are supposed to perform.

### ◆ Critique

It's hard to fault a product that works so well, but I'd like to have seen a more accessible method than a DIP switch to select the DSP depth; it's tiny, and a fine tool must be used to move the contacts. Its rear-panel location makes it inaccessible to change when it's mobile-bracket mounted.

The volume control can only be turned by a screwdriver



or fingernail, and it's counter-intuitive to operate, becoming quieter when turned clockwise. But you get used to it; after all, if the sound gets lower, you reverse what you're doing!

Admittedly, the accessory is designed for set-and-go applications where constant adjustment is not anticipated.

### ◆ The bottom line

The performance of the "Hear It" is impressive, indeed. No squirrely artifacts from the processor dancing in the background, yet virtually total elimination of annoying hiss without annoying distortion of the processed audio. What more can you ask of a DSP speaker?

*The GAP Hear It Speaker is available for \$158.95 from Grove Enterprises (7540 Hwy 64 West, Brasstown, NC 28902; 1-800-438-8155; <http://www.grove-ent.com>)*





# Midland's Excellent M-222P GMRS/FRS Handi-Talkie

**T**he world's smallest 22 channel FRS/GMRS two-way radio with 38 codes," that's what the fact sheet from Midland Radio Corporation says. At 3-7/8 inch high by 2 inches wide by 1-3/8 inches deep (excluding projections), the Midland M-222P sure does pack a lot of goodies into a sculpted package that nestles in the hand. And, by all appearances, it is built as solidly as the proverbial brick comfort station.

The M-222P is the latest entry in the "new wave" of two-way radios offering 22 channels – 7 FRS/GMRS, 8 GMRS, and 7 FRS.

Here's how they break down:

Frequency	Service	Power (watts)
462.5625	FRS/GMRS	2 or .5 selectable
462.5875	FRS/GMRS	2 or .5 selectable
462.6125	FRS/GMRS	2 or .5 selectable
462.6375	FRS/GMRS	2 or .5 selectable
462.6625	FRS/GMRS	2 or .5 selectable
462.6875	FRS/GMRS	2 or .5 selectable
462.7125	FRS/GMRS	2 or .5 selectable

467.5625	FRS	.5
467.5825	FRS	.5
467.6125	FRS	.5
467.6375	FRS	.5
467.6625	FRS	.5
467.6875	FRS	.5
467.7125	FRS	.5

462.5500	GMRS	2 or .5 selectable
462.5750	GMRS	2 or .5 selectable
462.6000	GMRS	2 or .5 selectable
462.6250	GMRS	2 or .5 selectable
462.6500	GMRS	2 or .5 selectable
462.6750	GMRS	2 or .5 selectable
462.7000	GMRS	2 or .5 selectable
462.7250	GMRS	2 or .5 selectable

If you're unfamiliar with the lingo above, FRS stands for Family Radio Service, an unlicensed radio service that is limited by FCC regulation to one-half watt transmitter power. Manufacturers generally claim "up to two miles" for FRS radios. My experience has shown that in rare exceptions the range can be considerably longer, but usually is much less than a mile if you have rolling terrain. For a "back of the envelope" guesstimate of FRS range, a half mile is probably a good rule of thumb.

GMRS is the abbreviation for General Mobile Radio Service, a licensed radio service. You pay a fee to the Federal Communications Commis-

sion to get a license to use GMRS frequencies. While there are GMRS repeaters across the country, most manufacturers' new GMRS offerings are simplex-only and not capable of accessing the GMRS repeaters. That is true of the M-222P, which is a "simplex only" radio. GMRS handiwalkies often have two watts of power. As a result they generally can talk farther than FRS radios under the same condition, so there is an advantage in combining FRS and GMRS in the same two-way radio.

Because the new M-222P brings together both FRS and GMRS frequencies and power levels in one radio, page one of the M-222P User's Guide states clearly that a license is required to operate on GMRS frequencies. The User's Guide commendably gives complete information on where to obtain the necessary forms and instructions.

### ◆ Features

Let's take a guided tour of the M-222P. The first thing you notice is its shape. It resembles a sculpted oval that has been gently squeezed at the middle. The advantage is that it fits the hand very nicely, but on the downside, you can't stand it up on a table.

On the front of the M-222P is a liquid crystal display that lets the user know what's going on with various functions of the radio such as adjusting the power, selecting a continuous tone-coded squelch system or adjusting the voice-operated transmit (VOX) setting (which works only with an optional VOX headset).

Below the LCD are five buttons. The upper left button, indicated by a musical note symbol, is the CALL button. Press it and a distinctive call

tone is transmitted to other radios on the same channel. There are ten different call tones that may be selected by the user. The lower left button is the DOWN button which is used for changing channels and other radio functions.

The upper right button is the MON button which is used to momentarily turn off the auto-squelch for listening to faint signals. Pressing the MON button also activates the backlighting for the LCD. The lower right button is the UP button. Finally, in the center is the MENU button.

Below the five buttons is the speaker grill and an opening for the built-in microphone. On the back of the M-222P is a removable plastic belt clip and a hatch for inserting three AA alkaline batteries. On the top of the case is a short, stiff, rubber-ducky type antenna and an ON/OFF/VOLUME knob as well as a rubber covering for an intercom jack. On the left of the case is a push-to-talk (PTT) button, and on the right side is a rubber covering for a speaker-microphone jack. That's it.

### ◆ Operation

One of the most interesting things about the M-222P is that the de facto setting is to lock everything but the ON/OFF/VOLUME control. If you want to change channels (or CTCSS code, power or what-have-you), you must first press the MENU button until the item in question flashes. Then use the UP or DOWN buttons to change the setting and press the PTT button to accept the new setting. Once you get used to it, it's a very slick idea, since it prevents newbies (or inadvertent button pushes) from messing up the radio's settings. (There is also a time-out timer that prevents overlong transmissions from wearing out the batteries.)

The performance of the M-222P rates with the best FRS/GMRS radios I have tested: good strong audio on transmit and receive, and range that is comparable to the best of the best on my standard test course. While the M-222P does not have the scanning functions that some radios have, in addition to top-notch performance, the M-222P has one killer advantage: price. A pair of these excellent radios typically sells for about \$69.95. What's not to like?

For more information call Midland Radio Corporation at 816-241-8500 or visit <http://www.midlandradio.com>.



*M-222P: great performance and a killer price.*

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# What's NEW

## Tell them you saw it in Monitoring Times

### Police Call Frequency Guide, 2003 edition

Edited by Richard  
Barnett

This 40<sup>th</sup> anniversary edition of the nation's favorite scanner directory is loaded with information for VHF/UHF listening enthusiasts. Covering land, sea, and air frequencies from 30-869 MHz, this latest edition includes public safety, railroads, forestry, aircraft, highways, transportation services, schools, news media, movie/TV production crews, security companies, rescue services, hotels, sporting events, public utilities, amusement parks and much more.

The directories are individually published by region, each covering several contiguous states. Listings are alphabetized by location, and include frequency, call sign, base or mobile class, and service. A by-frequency cross-reference allows the listener to look up the most likely source of an unrecognized transmission.

Each volume includes a CD-ROM version of the entire U.S. directory set; the CD is very easy to use, and appears to have worked out some of the operational problems experienced on earlier versions. The CD also includes the consolidated frequency list (CFL), omitted this year for the first time from the printed volumes.

The CFL is a reference frequency list for the VHF/UHF land mobile spectrum, showing the type of service allocated for each frequency. It is quite useful for picking search ranges for new listening targets, and will be missed by scanner listeners who don't have computers in their shacks or on the road, or who prefer to have the printed CFL handy alongside their scanners.

While the most important section of this year's edition has been brought up to date, some of the ge-

neric lists are getting long in the tooth. The FCC's refarming of the spectrum is mentioned, but the actual extensive frequency additions are not shown in the 151-154 MHz range, nor the new railroad band plan. Aero frequencies and Blue Angels should be updated, and the military section needs to be purged of closed bases and frequencies for the extinct Russian *Mir* space station.

But all said, this year's *Police Call Frequency Guide* remains the leading source of scanner frequency listings on the market, and with good reason. Its accuracy remains high, especially considering the rapidly-changing VHF/UHF spectrum assignments.

A *Police Call* directory for your region is available for \$19.95 plus shipping from Grove Enterprises (7540 Hwy 64 West, Brasstown, NC 28902; 800-438-8155; <http://www.grove-ent.com>).

### Crystal Radio Bonanza Xtal Set Society

It seems incongruous that in these days of electronic sophistication and high technology so many folks are still fascinated by the earliest form of radio reception, the crystal set. Yet this is, indeed, a fact, and I'm one of them. I'm spellbound as I put on a pair of earphones, string up a few feet of wire, attach the other end to a water pipe or ground rod, and hear voice and music without any batteries or other power source.

This latest assemblage from the Xtal Set Society is a compendium of volumes 9, 10 and 11, comprising 18 issues from 1999-2001 of their newsletter, and contains a rich concentration of knowledge from experimental building.

Build your own simple crystal set; enhance your listening with super selectivity; amplify your reception with either an old vacuum-tube circuit or modern transistor booster; listen to worldwide short-

wave or local AM with a simple antenna; fabricate your own primitive tuning components; return to those thrilling days of yesteryear...

At more than 200 pages and richly illustrated, this is bound to become the standard reference of the crystal set devotee!

Order #XVII; \$19.95 plus \$3.95 shipping from the Crystal Set Society (PO Box 1625, Norman OK 73070, or phone 800-927-1771). See their web site at <http://www.midnightscience.com>.

### Radio Data Code Manual

17th Edition by Joerg  
Klingenfuss

The age of digital electronics has spawned an incredible array of special languages and cyphers for exchange of communications. Nowhere is this assemblage more visible than on the HF spectrum. Dozens of proprietary systems and algorithms multiply into hundreds of variants heard as beeps and buzzes as the listener tunes through the 1.8-30 MHz spectrum.

For the curious, stand-alone decoders and computer software programs abound, but recognition is still a problem – unless you have a comprehensive guide such as the manual from Klingenfuss.

A massive 600 pages of illustrated information, the code manual provides an orientation to nearly every data transmission likely to be encountered on the air, along with lists of sources for decoding software and hardware.

The manual begins with an overview of conventional systems like chirp sounders, ARQ, FEC and multiplexing, then rapidly evolves through the various linguistic alphabets into dozens of the more complex data transmission systems like ALE, ACARS, SELCAL, NAVTEX, Piccolo, SITOR, Coquelet, Clover, and meteorologi-

cal codes as well.

Special chapters discuss cryptography, intelligence and terrorist communications, and include tables for locating and interpreting meteorological abbreviations and symbols as well as aeronautical locators. Massive details are provided for interpreting codes encountered on the airwaves.

This comprehensive reference is an outstanding companion for users of the sophisticated WAVECOM decoders.

The 17th Edition of the *Radio Data Code Manual* is \$45 plus shipping from Grove Enterprises and other *MT* advertisers.

—reviews above by Bob Grove

### Terk TV Volume Control Device

Here's something I've been needing for a long time: a device which will get rid of the irritating, inconsistent volume level of some commercials and TV stations. Terk's TV Volume Regulator (VR-1) will solve the problem of stations or commercials that hit you with a sudden blast while listening or surfing through channels. The VR-1 will also reduce music and sound effects which overwhelm the dialog in movies, or sudden loud noises which may wake the baby or disturb neighbors. It automatically reduces "hiss" and independently controls treble and bass audio for more intelligible speech.

The VR-1 is easy to install



# What's NEW

Tell them you saw it in Monitoring Times

and is compatible with any A/V device which uses RCA-type connectors. With an installed VR-1, users can set the desired level on a TV and forget it. The VR-1 has a suggested retail price of \$49.95: find one at your local dealer or visit <http://www.terk.com>.

## Grundig Satellit 900

Grundig announced the new Satellit 900 AM/FM/SW Radio – its high performance microprocessor-controlled, fully frequency synthesized, world band receiver – at January's Consumer Electronics Show. With continuous frequency coverage between 100 kHz and 30 MHz plus FM broadcast band coverage, the Satellit 900 is sharp, sleek, and compact.

The 900 uses a built-in fer-



rite rod antenna and telescoping whip antenna for longwave, medium wave, shortwave and FM frequencies in addition to the external antenna connector and switch-selected preamp. Tuning options have been increased: In addition to tuning by the rotary main tuning encoder or by direct numeric keypad frequency entry, customers can also select stations with channel increment select keys. This new feature enables users to scan and store up to 500 of their favorite channels. The Satellit 900 Radio is expected toward the end of 2003.

## Digital Scanning News

Some folks have reported problems using WinScan780 software with their Uniden BC780, in which the decimal place on the PC display is off by one decimal. If you find that Winscan780 software is not functioning correctly in your model, patches are posted for this and other glitches on the Pozilla website at <http://www.pozillasoft.com>

For those who haven't yet heard, Radio Shack/GRE is working on a digital scanner; no model number has been released yet, but it is to be based on the PRO-93/95 radios, and will track 9600 and APCO P25 digital trunking (no additional card required). It will also track Motorola 800 MHz splinter system types and is expected to retail around \$500.

AOR is working on the

ARD5000 – a separate box which uses the 10.7 MHz IF feed to decode APCO25 communications, and intended for use with the AR5000 or AR-5000+. Uniden is purportedly also working on a new model (not an upgrade) of digital-ready scanner which will accommodate 9600 baud trunk tracking.

None of the three digital scanners or adapters are expected until late (or later) 2003.

**Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, 7540 Highway 64 West, Brasstown, NC 28902. Press releases may be faxed to 828-837-2216 or emailed to Rachel Baughn, [editor@monitoringtimes.com](mailto:editor@monitoringtimes.com)**

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## A Hobby with Ulterior Motives

**Y**ou might wonder about the connection between the Minor Planet Center and weather satellites, but for me it is definitive! My main hobbies are monitoring weather satellites and observational astronomy. Ah! Is the connection becoming clearer?

When I first realized that it was possible to receive weather satellite (WXSAT) transmissions on modified VHF (very high frequency) receivers, and to decode the data to produce pictures, the real application for this became clear to me. Since that time back in the 1980s I have splurged on equipment to enhance the quality of the images, discovering weather facsimile (Wefax), primary data user stations (PDUS) and high resolution picture transmissions (HRPT) along the way.

Good quality images of land and clouds, especially time-lapse pictures, hold the answer to predicting the weather for later in the day. This allowed me to understand weather far better than simply watching weather forecasts – even local ones. A cloudy start to an evening can often be followed by clearing skies while one might otherwise be watching television. So my WXSAT monitoring led me to a much improved grasp of the evening's likely cloud cover. The telescope could then be set up despite the appearance of clouds, and an hour or two later I would be measuring the positions of distant asteroids, prior to forwarding the measurements to – yes – the Minor Planet Center.

Following our house move of nearly two years ago, my telescope is now mounted permanently in an observatory. I routinely obtain WXSAT images during most evenings, concentrating on those from NOAA-15 and NOAA-12, and using NOAA-17 for late-night checks. These images have greatly improved my ability to judge sky conditions. Perhaps you also have specific uses for WXSAT images, beyond the general interest in monitoring them?

### ❖ Polar Satellite Status

#### Meteor 3-5 end of life

At the end of the column each month I always include a brief summary listing the main transmission frequencies of the WXSATs that are most easily received. This time I am providing more detail for the benefit of those new to the hobby.

WXSAT monitors were surprised to read of the demise of the Russian Meteor 3-5 satellite. Notification came via a report from Mike Kenny: "OPERATION OF SATELLITE METEOR-3 X 5 WAS FINISHED SINCE 25 FEB-

RUARY 2003 AS A RESULT OF DAMAGE OF AIRBORNE EQUIPMENT."

As from late February, there are no active Russian WXSATs, and this appears likely to remain the case for some considerable time. Meteor 3-5 was launched in August 1991, and somewhere amongst my archives, I should still have recordings of its early transmissions. During the early orbit phase it provided infrared images of high quality during the night-time part of its orbit, but, as with previous Meteor satellites, these invariably failed within months. In recent years there have been problems with the quality of its images but these have remained largely usable, and always interesting. It looks as if the 137.30, 137.40 and 137.85 MHz transmissions will remain strangely silent for a long time.

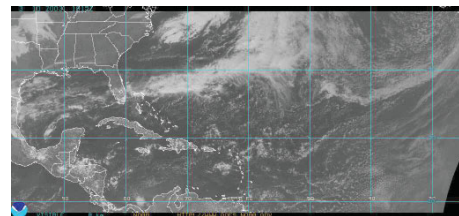
#### Polar WXSAT status

Potentially, we can receive transmissions from NOAA-12, NOAA-14, NOAA-15, NOAA-16 and NOAA-17. In practice, there are occasional limitations to VHF reception. NOAA-14 developed an image synchronization problem, so transmissions from its VHF antenna were terminated – but HRPT transmissions remain active, though mostly useless. NOAA-16's VHF antenna (or one or the components in the chain) failed, though again leaving HRPT active.

At the time of writing, we are entering the period when NOAA-12 and NOAA-15 start to overlap their footprints – that is, regions at ground level receive simultaneous transmissions from both satellites, causing interference. Normal practice is that NOAA-15 takes precedence as the operational WXSAT, so the VHF transmission from NOAA-12 is likely to be switched off for a few weeks. The result of this overlap is that APT (the VHF transmissions) will only be available from two polar WXSATs – NOAA-15 and NOAA-17!

Another limitation: although deactivated some years ago, the old satellite NOAA-9 sometimes comes back to life, transmitting a weak carrier on 137.50 MHz and in the 1700 MHz band. I heard this carrier for the first time a few years ago and logged it. It was several months before it was widely accepted that the observations were real! One consequence is that the tumbling satellite sometimes interferes with transmissions from the other NOAAs. If you have a general purpose utility receiver, it is worth trying to identify any transmissions from NOAA-9. Check that your satellite predictions program is updated with the latest Kepler elements at

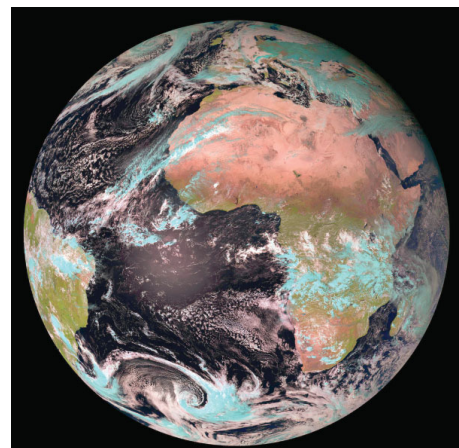
<http://www.celestrak.com/NORAD/elements/> and check the times for NOAA-9. If you hear convincing transmissions during any pass, NOAA is interested in receiving your log at: [satinfo@noaa.gov](mailto:satinfo@noaa.gov)



**Fig 1: GOES-E visible-light 1815UTC 10 March showing 'hurricane region' (Atlantic), fortunately without hurricanes!**

### ❖ Upcoming editions

I plan to provide a feature on the new digital transmissions (LRIT) from GOES, during future months. Also, read about what happened when a solid-state amplifier blew on Europe's latest geostationary WXSAT (MSG-1) and how it could be providing an unexpected bonus for amateurs!



**Fig 2: MSG-1 early test image from SEVIRI system - copyright EUMETSAT**

### Frequencies

NOAA-12 and -15 transmit APT on 137.50 MHz (but see above)  
NOAA-17 transmits APT on 137.62 MHz.  
Meteor 3-5 previously transmitted APT on 137.30 MHz when above sunlit ground (but see above)  
GOES-8 and GOES-10 use 1691 MHz for WEFAX

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## Freedom to Listen

By Jorge Rodriguez

Since this month marks the beginning of a new, regular feature in *Monitoring Times* on *Monitoring and the Law*, it seems fitting to look fundamentally at why so much effort is devoted to regulating radio listening. The first amendment to the U.S. Constitution, which we all learned in school, says, "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for a redress of grievances."

While the amendment covers five rights all Americans share, it is perhaps the freedom of speech that most of us refer to when we think of our rights under the First Amendment. How useful is such a right, if the government does not give with it a corresponding right to listen?

Certainly no freedom of the press would exist where a government allows journalists to gather the news and then prohibits the people from listening to it. Can you imagine a government padlocking all the newspaper vending machines and kiosks in order to keep readers from getting the actual newspaper? And how useless would a freedom of assembly be, if the government required hearing protectors be worn by all in attendance? These ridiculous examples illustrate the fact that many of these First Amendment freedoms are not freedoms at all if the recipients of the information are not allowed to listen; if they are not given a freedom to listen.

A freedom to listen is obvious in the examples above, but it becomes cloudy when we add radio and electronics to the picture. If Marconi's invention had existed when the founding fathers wrote the Constitution, would the First Amendment have included words to the effect that Congress shall make no law abridging the freedom or the right of the people to listen?

### Freedom versus Privacy

Certainly the privacy concerns of some must be balanced against the listening rights of others. But how far should government go in restricting the citizen's right to listen, the fundamental right inherent in most of the First Amendment to receive information and knowledge?

Balancing privacy interests is one thing, but some of the government's attempts in recent years at regulating listening and communication seem as ridiculous as the examples above. Limits on the equipment and rules prohibit-

ing listening to other people's telephone calls is easily understood and appreciated even by those involved in radio listening. Nobody wants someone listening to their private telephone calls, whether their listening on another extension in the house or a radio miles away from the conversation. But don't tread on my use of my own radio receiver, say others.

While you may not agree with it, most of can see the safety issues at play in attempts to regulate cell phone use in cars. But let's face it, some of the other rules on when and where you can communicate (remember, listening is at least fifty percent of communicating) are hard to rationalize. It's still a wonder to me that no one has challenged the restriction on using your cell phone immediately after you deplane on U.S. soil from an international flight. Is it an Immigration and Naturalization rule or a Customs rule? Who made the rule? You don't see any signs saying the Code of Federal Regulation or Title XXX, Section xx prohibits you from talking to your loved ones and telling them you made it across the pond safely.

### Good Intentions versus Bad Laws

In February the City of New York overrode Mayor Michael Bloomberg's veto and passed Introduction 0257-2002A, a local law banning the use of mobile telephones at public performances. The law broadly defines mobile telephones as a "cellular, analog, wireless, digital or other similar telephone or communications device, which can be used to access two-way real time voice telecommunications service that is interconnected to a public switched telephone network and is provided by a commercial mobile radio service."

What is more alarming is that you can violate the law by merely listening. Now no person shall receive a mobile telephone call signaled by an audible sound (better check the decibel rating of that supposedly silent, vibrating alert), dial a mobile telephone, or talk or listen on such a device in the area, room, or chamber of any indoor theatre, library, museum, gallery, motion picture theatre, concert hall, or building in which theatrical, musical, dance, motion picture, lecture, or other similar performances are exhibited.

Maybe it is about time to write your elected representatives in Washington and urge them to pass the next Amendment to the U.S. Constitution, "The right of the people to listen shall not be infringed."

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